

AMERICAN



APRIL 1941

VOLUME 1



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AMERICAN FORESTS

EDITOR

Ovid Butler

ASSOCIATE EDITORS

Lilian Cromelin

Erle Kauffman

Published monthly by

THE AMERICAN FORESTRY ASSOCIATION

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The American Forestry Association is a citizens' organization for the advancement of intelligent management and use of the country's forests and related resources of soil, water, wild life and outdoor recreation.

Its educational activities seek to bring about a better appreciation and handling of these resources, whether publicly or privately owned, that they may contribute in the highest degree to the welfare of the nation and its people.

In addition to publication of two magazines—AMERICAN FORESTS and CONSERVATION, both designed to keep before the people of the country important conservation questions and issues, the Association carries on educational projects in various fields including forest fire prevention, reforestation, protection of fish and wildlife, upstream flood control, prevention of soil erosion, preservation of wilderness areas, establishment of national forests and parks, development of forestry by private endeavor, the teaching of conservation in the schools of the country, promotion of research in timber growing and use and expansion of markets for forest products.

The Association is independent. It has no connection with any federal or state governments. It is non-political and non-commercial. All its resources and income are devoted to the advancement of conservation. It has been so operated since its founding in 1875. All citizens interested in forestry and conservation are eligible for membership.

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CONTENTS

VOLUME 47

April, 1941

NUMBER 4

AMERICAN FORESTS

Page

- 146 BIG TREES—The Great Dorrington Sugar Pine
- 151 THE EDITOR'S LOG
- 153 A WILDERNESS OF THE SKY
By Claude M. Kreider
- 156 SEQUOIAS
Poem by Cristel Hastings
- 157 ANNUAL MEETING PROGRAM
- 158 SOLVED—THE MYSTERY OF ROSS'S GOOSE
By B. W. Cartwright
- 160 NURSE CROPS—A NEGLECTED ALLY
By S. O. Heiberg and H. H. Tryon
- 163 AMBER—GOLD FROM ANCIENT TREES
By Frank A. Montgomery, Jr.
- 166 CALIFORNIA—TREASURELAND OF TREES
Pictorial feature
- 174 REDISCOVERING THE TRAIL OF THE PIONEERS
By Russell D. Daigle
- 177 EDITORIALS
A Conservation Bottleneck
Prairie Tree Banks
- 178 MOLDING WOOD TO MAN'S WILL
By F. J. Champion
- 180 REPORT ON AMERICAN BIG TREE HUNT
- 182 CONSERVATION IN CONGRESS
- 183 TRAIL RIDERS PREPARE FOR 1941
- 184 YOUR SHADE TREES—Flowering Trees for Street and Lawn
By Samuel N. Baxter
- 198 NEW BOOKS
- 208 "WHO'S WHO" AMONG THE AUTHORS

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BIG TREES

The American Forestry Association is sponsoring a national hunt for the discovery and preservation of the largest specimens of the different species of typical American trees. Locate, measure and nominate your candidate in this competition. ACT NOW to make known and save the largest specimens of America's trees. For further details, see page 412 of the September issue or send for special announcement of this Big Tree hunt. Mail your nominations with records and pictures to The American Forestry Association, 919 17th Street, Northwest, Washington, D. C.

Giant Sugar Pine Challenger

NOMINATED as the world's largest Sugar Pine by J. R. Hall, Supervisor of the Stanislaus National Forest in California, this great specimen tree stands at Dorrington Resort, on the Stanislaus.

It is well worth preserving, not only because of its size but because it is on the edge of a meadow just off State Highway No. 4, from which it is clearly visible. It stands just three miles from the Big Trees State Park, which is a fine grove of *Sequoia gigantea*. Measured by a forest officer on June 9, 1937, it has a circumference breast high of 31.8 feet, an average diameter of 10.1 feet and is 200 feet high. It is reported to have been 84 feet higher than at present, but has lost its top.

Located on land recently purchased by the San Francisco Girl Scouts, it is in safe hands and will undoubtedly be cherished and preserved.

On page 180 will be found the first official report of the largest trees of their species located in the Association's campaign to preserve the giants of America's trees. Help in the Big Tree Hunt by nominating trees known to you.

The great Dorrington Sugar Pine, as seen from the meadow

Frontiersman!



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For a Glorious
CONVENTION—VACATION
in Los Angeles

Plan to attend the Annual Meeting
of
THE AMERICAN FORESTRY ASSOCIATION
April 15-17, 1941

Los Angeles County — Nature's Vacationland

941
 MAY SPEAK
 FROM
 EXPERIENCE

LETTERS FROM
 INDIAN USERS

"I have with me
 one check for
 INDIAN FIRE
 PUMPS. These FIRE
 PUMPS are wonderful
 and what they are
 good for to do and
 what they are recom-
 mended for highly. I
 have been without
 INDIANS for any-
 thing. Whenever I go
 INDIAN FIRE
 PUMPS are with me.
 I have had some
 bad forest fires
 and have and I
 had the depend-
 on the other forest
 fire and on me at
 10 and 60 miles
 to save them in
 the forest fire, so
 I have what you
 INDIAN FIRE
 PUMPS can do."

W. McGuire,
 Forest Warden,
 Montana, M.D.

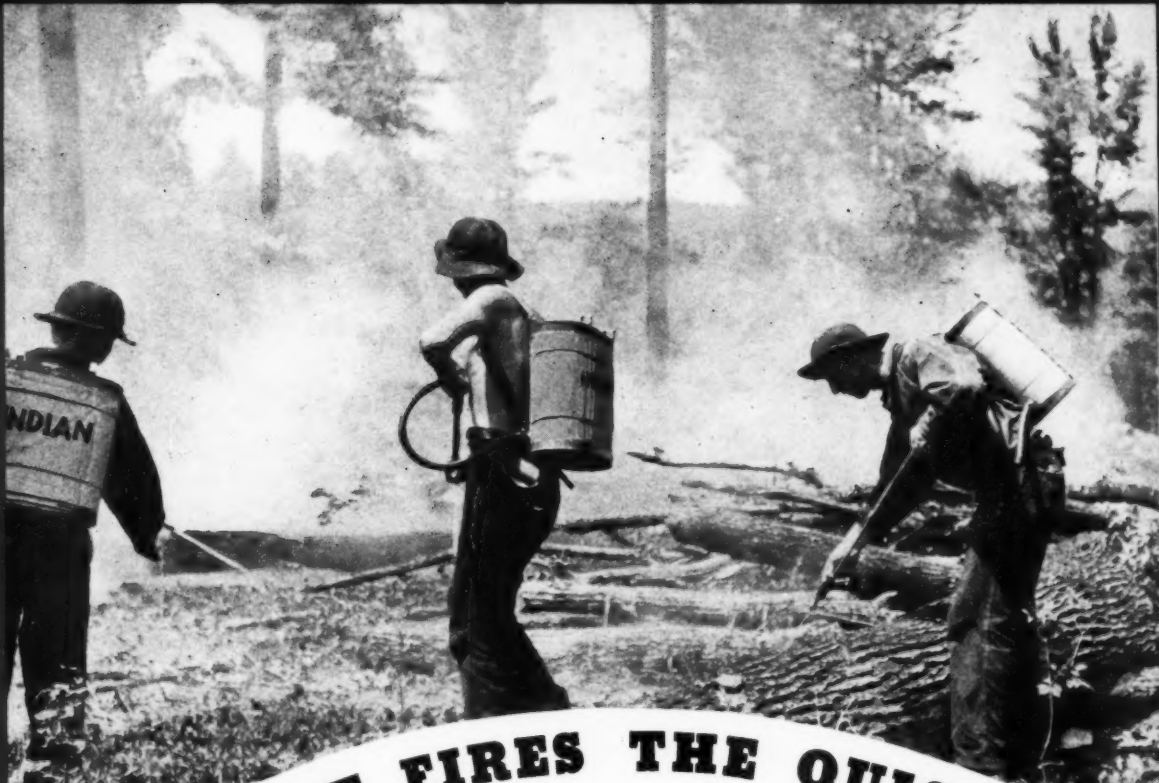
"INDIAN FIRE
 PUMPS are well de-
 signed for fighting
 brush fires
 and one knows
 that water
 is used in fight-
 ing of this type
 forest fire and
 is not only saved
 but is not. These
 pumps are selected
 as in some of
 the properties."

W. N. Spring,
 New York
 College of Fore-
 stry, Syracuse,
 New York.

"I have with me
 INDIAN FIRE
 PUMPS. I have
 used them at present
 in some INDIANS
 in the Truck, and
 I have used them since
 the last time
 in my opinion,
 INDIAN is the
 best way to fight
 brush fires.
 I have enough
 of them now
 to handle any
 fire that will reach
 me."

W. G. Gilmour,
 Fire Chief,
 Wisconsin, Conn.

"The Forest
 Service is equipped
 with 40 IN-
 DIAN FIRE PUMPS
 and the needed tool
 in the wild forest
 which we find in
 the country, particu-
 larly in the forest
 fire. One
 INDIAN FIRE
 PUMP is indispens-
 able to the foreman
 in the forest fire
 and the light pump
 is the best tool
 in the forest fire."
 Forest
 Service, W. G. Gilmour,
 California.



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 PUT IT OUT quickly, completely, before it spreads.
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 safety. And the SPEED is there with INDIAN FIRE PUMPS.
 Once filled with clear water INDIANS are ready. They never



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 into the blaze that drenches it instantly. When INDIANS
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 farms, railroads, lumbermen, etc.

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 hardest kind of use be-
 cause they are made right
 of quality materials. Many
 have been in service over
 10 years. Wide web straps
 permit carrying tank on
 back. Also may be carried
 by handle. Air condition-
 ing prevents dampness
 reaching carrier's back.
 New Armco Zincgrip rust-
 resisting tanks.



SEND FOR

MODERATE IN PRICE

Low cost of INDIAN
 FIRE PUMPS permits
 having ample supply on
 hand. There is no upkeep
 expense—no chemicals to
 buy. Fire gives no warn-
 ing. Be ready for it with
 an INDIAN. It is better
 to have one and seldom
 need it than to need it
 and not have it.

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C. P. WILBER

OUTSTANDING because of his many interests in the field of conservation and forestry, and particularly state forestry, Charles Parker Wilber was elected to the Board of Directors in 1941 to serve a five-year term.

A native of New Jersey, Mr. Wilber was born at New Brunswick October 23, 1883. He was graduated from Rutgers University in 1905 and from the Yale Forest School two years later. His start in practicing his profession of forestry was in one of the large hardwood mills of the South, but in 1908, he entered the Federal

OUR DIRECTORS

Forest Service and worked in the Rocky Mountain region for nearly three years on timber reconnaissance and timber estimating. Returning to New Jersey, he was employed as assistant to the state forester and for ten years devoted himself to building up the State's fire protective organization.

On the retirement of Alfred Gaskill, first state forester of New Jersey, he succeeded to that position, in charge of the Division of Forests and Parks. Here he has been responsible for the public land acquisition in the State, for the institution and operation of the state nurseries and for the reforestation work which this program has involved. And he has as well been actively in charge of the State Park movement, which has made such notable progress in New Jersey since its inception.

In 1937, he assumed the directorship of the State Department of Conservation and Development, and serves on the State Planning Board, the State Soil Conservation Committee, the New Jersey Council and on the Executive Committee of the State Parks and Recreation Association. A Senior Member of the Society of American Foresters, he is a past president of the State Foresters' Association.

Mr. Wilber has written many bulletins as well as articles on forest fire control and general forestry, on land use, parks and public recreation and—apart from his professional career, he is a garden enthusiast.

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Henry S. Graves, 1941—Connecticut—Yale School of Forestry

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William F. Wharton, 1942—Massachusetts—National Association of Audubon Societies

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IN THIS column last month attention was called to the fact that 1941 marks the fiftieth anniversary of the birth of our NATIONAL FORESTS—greatest achievement in American conservation. It remained for Edward J. Meeman, editor of the *Memphis Press-Scimitar*, to remind us that 1941 marks another event of great historic significance—the

400th anniversary of the discovery of the Mississippi River by Hernando De Soto. This Mr. Meeman did at the recent North American Wildlife Conference by proposing a resolution which was enthusiastically adopted calling for the creation of a "DISCOVERY FOREST" to commemorate the event.

"Let us mark this anniversary," proposed Mr. Meeman, "not by a dead monument of bronze and stone, but by a living monument of eternal growth—the creation of a great DISCOVERY FOREST on the banks of the Mississippi River, so named for the double reason that it will commemorate the anniversary and that it is appropriate because, as John Burroughs has told us, man's every visit to the woods may be a journey of discovery.

"Let this DISCOVERY FOREST be useful in all ways that a forest may be useful—in the saving of soil and water, the growth of timber, provision for hunting and fishing and other recreation.

"Let this DISCOVERY FOREST contain as its central feature and climax, a Grove of Repentance—an area to be restored to primitive conditions, where those conditions once having been achieved as nearly as possible, nature would remain forever undisturbed. This grove to be a symbol of the nation's solemn resolve to turn from waste to conservation, and a perpetual shrine of the nation's respect for nature."

Here is a worthy proposal which combines sentiment and utility to quicken the spirit and patriotism of all America.

* * * * *

The lure of fishing days again is in the blood. How many men, women and children—not forgetting the few barefoot boys who are left—will succumb to the lure before the year runs its course? The federal Fish and Wildlife Service has the answer. According to the Service, the number of sport fishing licenses being issued by the states approximates 8,000,000 annually. Of this number, some 16,000 are sold to children and 220,000 to women. The aggregate revenue derived by the states from fishing licenses well exceeds \$10,000,000. The leading states in point of revenue are New York, California, Pennsylvania, Michigan and Indiana in the order named. But 8,000,000 anglers do not represent the total sport fishing fraternity. The Service estimates that an additional 4,000,000 men, women and children are exempt from license requirements so that the total number of anglers in the United States approximates 12,000,000. No wonder there is more fishing than fish!

* * * * *

The old saying that necessity is the mother of invention seems to be working in Sweden's forest economy. Holger Lundbergh of the American-Swedish News Exchange in a letter to the editor says that since the war the shortage of gasoline in Sweden has spurred the improvement and invention of automobile engines which can be run on gas generated from charcoal and even from plain wood. There are in that country today, he says, more than 30,000 trucks, buses and passenger cars thus fueled and the weekly consumption of charcoal has increased to 7,000 tons.

Orin Luther
Editor.



Devereux Butcher

Magnificent is the canyon and valley of the South Fork of Kings River. Here in this rugged wilderness park, no roads now shall penetrate and the true mountain lover may find here the solitude his soul craves, far from the "madding crowd"

C. M. Kreider

Fed by glistening streams tumbling down a hundred canyons from high lake basins runs the Middle Fork of the Kings—through Simpson Meadow, a Yosemite-like valley nearly a mile deep



A WILDERNESS OF THE SKY

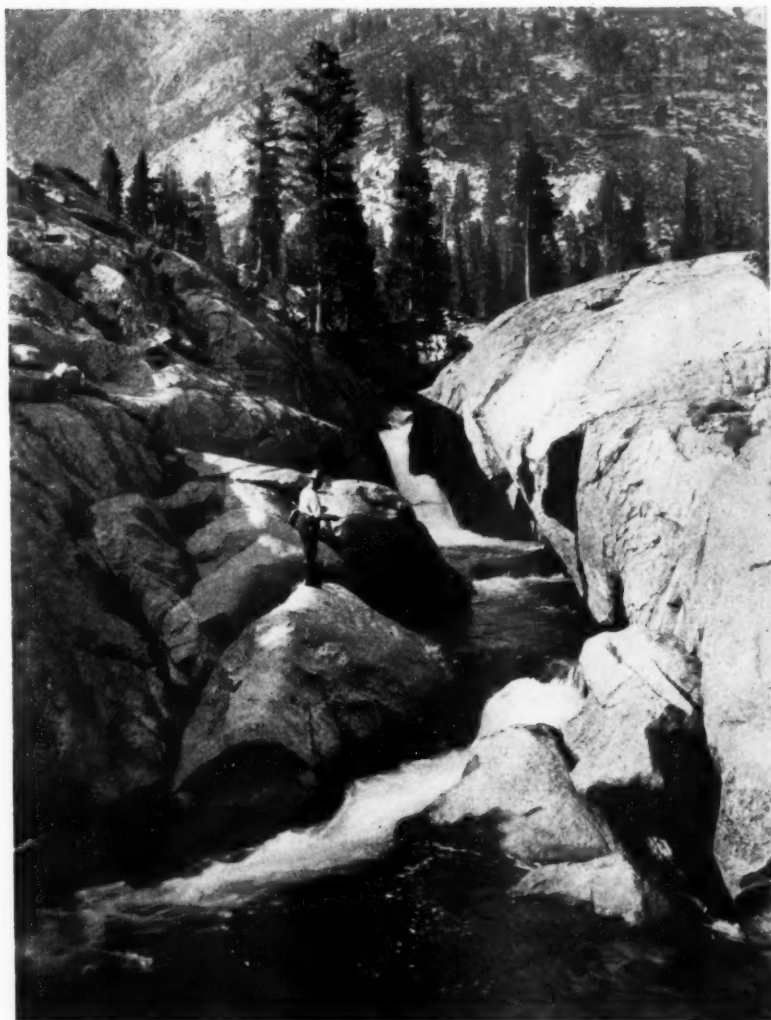
Such is the Newly Created Kings Canyon National Park — California's High Mountain Playground

By CLAUDE M. KREIDER

WHEN the President, in March, 1940, signed the bill creating the Kings Canyon National Park, in the heart of the California Sierra, a long standing controversy between various groups and interests came to an end. For many years certain conservation and mountaineering organizations, among which the Sierra Club was outstanding, worked for the establishment of the park. Many public spirited individuals, also, following the lead of that greatest of all Sierra lovers, the immortal John Muir, urged the creation of a national park in this tremendously rugged Kings River area.

This park of 704 square miles' area ranks fifth in size among the national parks of the Nation, being exceeded in California only by Yosemite's 1,125 square miles. Also, it is one of our two national parks to be designated wholly as a wilderness area, where no roads may ever penetrate, and where improvements such as hotels will be taboo. The other wilderness park is the Olympic National Park in Washington. Thus, the term wilderness will mean just that, and one may visit the hinterland of the region only by trails, a network of which already branch out up the two main river canyons through tributary gorges and their scores of alpine lake basins, rendering accessible practically all of this tremendous region.

The true mountain lover will here come into his own, following that magical, narrow furrow, the Trail, to new rugged and truly magnificent delights. He may procure a pack outfit "de luxe," with camp cook, guide, and mules to carry all of his equipment, and scarcely soil his hands. Or he may simply hire a patient little pack burro, throw a diamond hitch over a well-chosen outfit, and go happily afoot up the trail to explore and fish and camp and loaf.



Here is a fisherman's paradise,—in rushing streams, right along the margin of great snow banks. And, in the high deep, blue lakes, are found the native Sierra goldens—the world's most beautiful trout

H. T. Rogers, Inc.

Last summer, according to the National Park Service, more than a thousand "back country" pack trips were made from park headquarters on the floor of the canyon of the South Fork of the Kings River. Another thousand wilderness enthusiasts entered the park by trail

from other points, many of them starting from Owens Valley, along the eastern base of the Sierra. It was from this valley that The American Forestry Association last summer launched the third expedition of its Trail Riders of the Wilderness to explore the Kings Canyon wilderness. So, it would seem, the trend toward these delightful trail trips is well established.

For the automobile visitor, the journey up the splendid highway from San Joaquin Valley points, through the magnificent sequoias of the General Grant section—formerly General Grant National Park—and then down to the floor of the great gorge of the South Fork, offers a variety of thrills.

One who has gazed into famed Yosemite Valley from Inspiration Point may experience a similar thrill when he looks down into the great South Fork Canyon from the road leaving the Grant Grove, which descends gently but steadily some 4,000 feet to the river. Directly across the canyon rears Monarch Divide, a tremendous lateral spur, to a height of nearly 12,000 feet. Up the river a few miles, and seemingly perpendicular, are the three great domes of the canyon rim—North Dome, Grand Sentinel and Glacier Monument.

The latter stands, magnificently, nearly 5,000 feet above the valley floor. It is easily comparable in every respect to Yosemite's famous Half Dome, and, with its kindred giants, recalls John Muir's words of more than a half century ago, when he spoke of the magnificence of Kings Canyon and "its Yosemite-like domes." And we shall never read a more beautiful and comprehensive description of this immediate region than Muir's words: "... The bottom of the valley is about 5,000 feet above the sea, and its level or gently sloping surface is diversified with flowery meadows and groves and open sunny flats, through the midst of which the crystal river, ever changing, ever beautiful, makes its way.

"From the head of the valley other mountains rise beyond in glorious array, every one of them shining with rock crystals and snow, and with a network of streams that sing their way down from lake to lake through a labyrinth of ice-burnished canyons. . . ."

Perhaps the earliest written report of this region came from the pen of Judge Elisha Cotton Winchell, a learned and keen observer, with a genuine appreciation of mountain beauty and grandeur. With a horseback party he traveled in the autumn of 1868 from the San Joaquin Valley up through the region we now know as the Grant Grove of sequoias. He mentioned the numbers of black and cinnamon bears in the region and wrote: "The hundreds of square miles of mountain jungle which clothe these spurs are the haunts of numbers of these, as well as brown and grizzly bears."

Unhappily now, the last great California grizzly in this region was killed, according to authentic record, some years ago, in Sequoia National Forest to the south. The common black and cinnamon bear, however, still range in this portion of the Sierra.

In traveling the remote areas of the mountains one is sure to wonder how the first trails were ever made through that granite wilderness which, even today, seems utterly impenetrable. The solution is really simple and logical. Game trails first followed the natural routes up the canyons and gorges, through the lake basins and across the narrow notches in the main crest and lateral ridges. Then came the Indians, on their hunts and trading—perhaps raiding—expeditions from one side of the range to the other. Soldiers may have followed these same trails; and later came the prospectors, geologists, government men and sheepmen, in turn to be followed

by the forest rangers, hunters, campers and fishermen.

So, there is history etched in every foot of that brown trail or narrow granite shelf you may travel in the back country, the beginning of which may extend back through the centuries, for there is little recorded data on the movements of the early day Indians of the San Joaquin and Owens valleys.

Probably the first scientific party to camp in the South Fork Canyon and to explore this region was the Whitney survey party, headed by Professor Whitney, then state geologist. With him was an energetic young geologist and mountaineer, Clarence King, representing the federal government, whose book, *Mountaineering in The Sierra Nevada*, is still considered a classic of its kind.

To realize how little was known of the great range in 1864, the date of the party's visit, we have only to refer to King's records. At that time no survey had been made of the higher peaks, their elevations were not known, and the highest could only be guessed at. King and a companion climbed Mt. Brewer, an outstanding and beautiful peak rising abruptly to 13,577 feet, just to the southeast of the canyon, and from there, across the serrated crest of the Kings-Kern Divide, they gazed upon a higher peak which, by triangulation, made with instruments laboriously carried on their backs, proved to be above 14,000 feet in elevation.

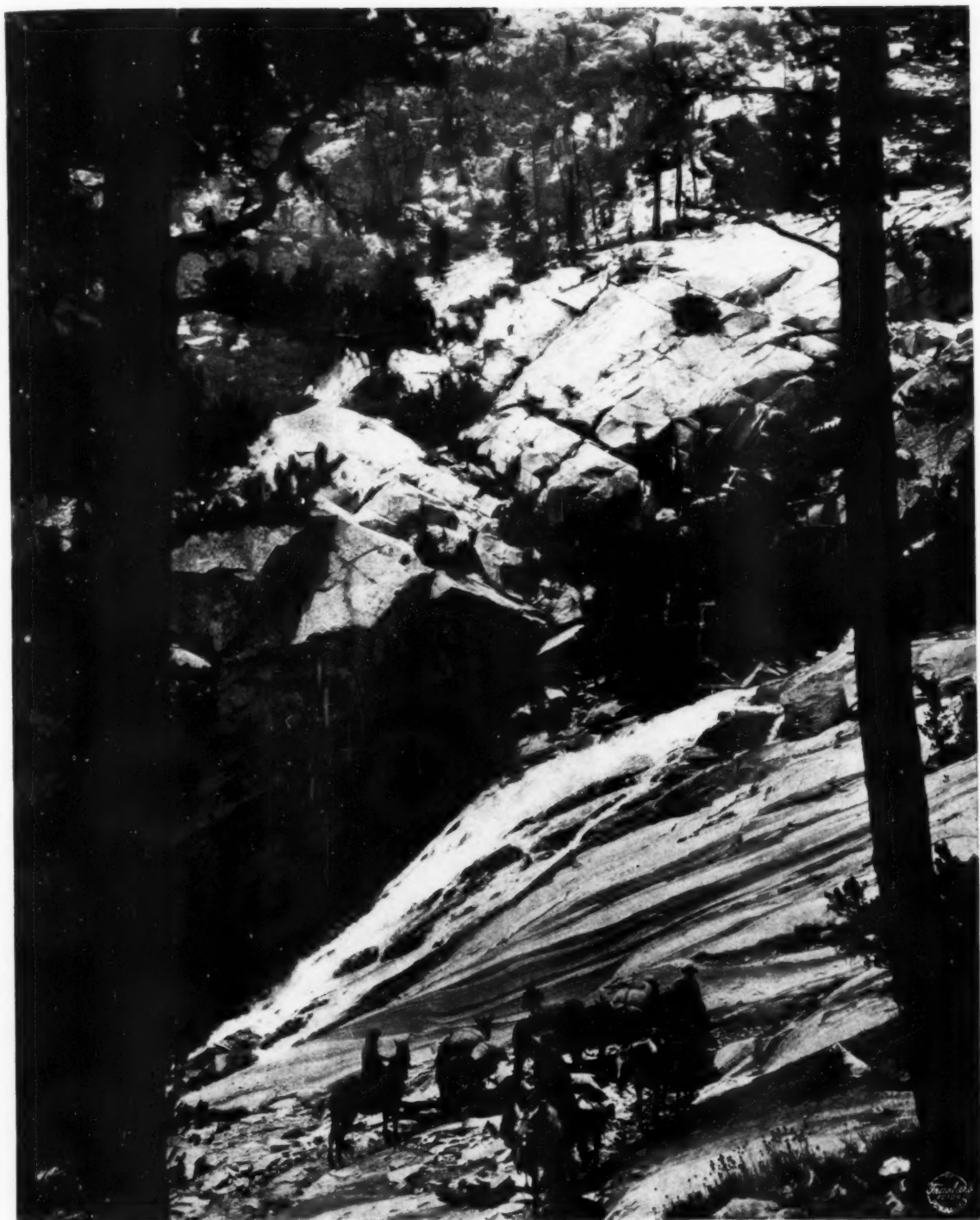
With great satisfaction these rugged alpinists reported their discovery to their superior, and begged permission to attempt to scale it, feeling sure the "highest peak," to be named Mt. Tyndall, had been found. Later, after tremendous difficulties, which proved the mettle of these great mountaineers, they stood upon Tyndall, to find that its true elevation was barely above 14,000 feet. And then, to the south, they gazed in awe upon a grand dome much higher, later to be named Mt. Whitney, but which the intrepid King was not to ascend until several years later.

The prospective visitor should not assume that this impressive region is all set on edge, however. There are many smooth, green meadows and verdant canyon floors similar to the South Fork Canyon. In the high lake basins, connected with the main river by scores of rugged, glacier polished canyons, there are wide, gently sloping alpine meadows, deeply carpeted with the softest and brightest green hair grass imaginable.

Almost of moss-like structure, this grass grows magically after the melting of the winter snows and, throughout the summer, it springs from the sodden gravel right beside the margin of great snow banks, along with delicate little wild flowers and the tiny heather, which may be found far above timberline. Calm, deep blue lakes and alpine tarns are sprinkled throughout these great basins, just under the frowning peaks of the main crest, and in them are trout, the most interesting of which is the native Sierra golden. He has been transplanted throughout the higher elevation waters of the range from his original home in a tiny brook below Mt. Whitney, and is conceded by all observers to be the world's most beautiful trout.

All of these alpine basins are of similar elevation, roughly 10,500 feet, and, geologists tell us, were gouged out by the slowly slipping and melting glaciers as they first released their tenacious grip of untold centuries from the peaks, and started the action which later formed the great gorges and canyons of the lower range today.

The most casual of visitors may walk or ride a few miles up the canyon from the park headquarters to Paradise Valley, or to the gorge of Bubbs Creek, and observe the tremendous, bulging granite walls, polished to almost



Just a stop to "breathe" the hard-working animals while ascending the glaciated bedrock of one of the great canyons of this granite wilderness, impenetrable even today save along the trails. Up these trails, the Association's Trail Riders made their way in 1940, exploring King's Canyon

mirror-like smoothness by the melting ice monster, ages ago.

So far we have looked only into one portion of the South Fork Canyon. Across Monarch Divide, twenty-eight miles to the north by trail, lies Simpson Meadow, another Yosemite-like valley nearly a mile deep. Here, the Middle Fork of the Kings River is even a larger stream than the South Fork. It, too, is fed by glistening streams tumbling down a hundred canyons from scores of high lake basins, lying under the shoulder of grand peaks that are from 13,500 to above 14,000 feet above sea level.

And further north, three days' travel by trail from park headquarters, is Muir Pass, 12,000 feet elevation, beyond which stretches wide Evolution Basin, literally filled with alpine lakes, and still within the park boundary. In the pass stands a sturdy and artistic stone building, built by public and private funds as a lasting memorial to the greatest of Sierra lovers, John Muir. The stone was laboriously shaped on the spot from the native granite he studied so many years. The sand for the cement was packed on mules from the creek, far below.

Also, as perhaps a more fitting monument to that great man, there is the Muir Trail, which probably has no counterpart anywhere in the world. It extends by an "all-high" route, crossing passes up to 13,300 feet in elevation, extending from Mt. Whitney and the Kern

River country to Yosemite Valley, and seventy-eight miles passes through Kings Canyon National Park.

To properly appreciate the vastness, the awesome ruggedness, the sheer grandeur of this region one should essay a trail trip of whatever scope his time and pocket-book permit; and the expense need not be great, as witness the "burro-packer," who goes afield "cheaper than staying at home." Mr. Average Citizen may do himself very well, and be comfortable on a good, gentle saddle horse, with a pack mule to carry his camp equipment. He will need work no harder than at home in the back yard, and be in far less danger on those mountain trails than were he crossing the streets in the traffic of his home city.

Travel records for the park show that 201,545 persons checked in at the main entrance last year, a striking indication of the interest the public is showing in this new, and so far, little advertised region. Certainly those persons who only drove down to the canyon camp ground and loafed and gazed and marveled at what they saw for a day or a week were well repaid.

They saw some of the world's greatest trees, those grand sequoias in the Grant Grove, on the way; perhaps made the wonderful loop trip over the splendid highway through Sequoia National Park and Giant Forest, only an hour's drive to the south. It all works in as a part of the easy journey into this grandest section of the mighty Sierra.

SEQUOIAS

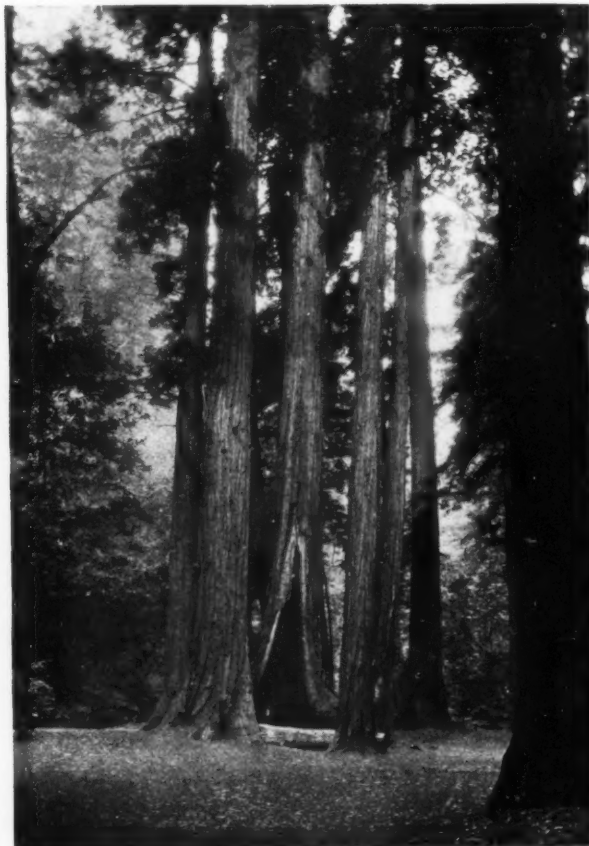
Out of the morning mist they lift
Their crowns against the skies,
High where only the cool fogs drift
And where an eagle flies.

The secrets of centuries are locked
Secure in these ancient trees,
Old as the sun and the winds that chant
Their sighing symphonies.

A forest fragrance clings about
These pillars of the sky,
Their giant trunks like mastodons,
Their branches green and high.

Flames they dread and the saw-mill's mouth,
But never the centuries
That leave them but more beautiful,
These monarchs of all trees.

—CRISTEL HASTINGS.



PROGRAM

SIXTY-SIXTH ANNUAL MEETING OF THE AMERICAN FORESTRY ASSOCIATION, TO BE HELD AT LOS ANGELES, CALIFORNIA, APRIL 15, 16 AND 17, 1941

HEADQUARTERS — THE AMBASSADOR HOTEL

The following program for this first Association annual meeting on the Pacific Coast is still tentative and subject to revision since acceptances have not been received from all speakers listed. Members planning to attend are urged to make reservations as soon as possible, particularly if they are joining the special annual meeting tour to California by way of historic Santa Fe and the Grand Canyon. Reservations may be made by writing The American Forestry Association, at Washington or the Ambassador Hotel at Los Angeles.

TUESDAY, APRIL 15

MORNING SESSION—10:00 A. M. Ambassador Hotel

Welcome—William A. Smith, Supervisor of Los Angeles County

"The American Forestry Association—What We Have Been Doing and Why"

James G. K. McClure

Retiring President, The American Forestry Association

"The American Forestry Association—What We May Do and Why Not"

W. S. Rosecrans

President, The American Forestry Association

"Water—the Life Blood of the West"

Samuel B. Morris

Dean, School of Engineering, Stanford University

"National Parks and National Forests in Relation to the Development of the Western States"

Frederick P. Champ

Cache Valley Banking Company, Logan, Utah

LUNCHEON—12:30 P. M. Ambassador Hotel

"The Relation of Conservation to the National Defense Program"

William B. Greeley

Secretary-Manager, West Coast Lumbermen's Association

AFTERNOON SESSION—2:00 P. M. Ambassador Hotel

"Conservation and the Western Woman"

Florence Kjorlie

National Chairman of Conservation, National Federation of Women's Clubs

"Grazing in Relation to Conservation"

Albert Mitchell, Albert, New Mexico

"Management of Private Timber Lands for a Second Crop"

Clyde Martin

Forester, Weyerhaeuser Lumber Company

WEDNESDAY, APRIL 16

MORNING SESSION—9:30 A. M. Ambassador Hotel

"Control of Major Floods"

Colonel Warren T. Hannum

Division Engineer, United States War Department Engineers, San Francisco

"Management of Agricultural and Grazing Lands in Aid of Flood Control"

John F. Johnston

United States Soil Conservation Service

"Management of Forest and Wild Lands in Aid of Flood Control"

C. J. Kraebel

California Forest and Range Experiment Station

AFTERNOON SESSION

Field Trip by motorcade to inspect flood control and water conservation projects in Los Angeles County.

Visit to Huntington Library and the California Institute of Technology for ladies not wishing to make field trip.

EVENING SESSION—Annual Banquet, 7:00 P. M. Ambassador Hotel

"The Role of Public Lands in the Economic and Social Development of the West"

W. C. Mullendore

Executive Vice President, Southern California Edison Company

THURSDAY, APRIL 17

MORNING SESSION—9:30 A. M. Ambassador Hotel

"The Role of Fire in Western Forests"

S. B. Shaw

Regional Forester, United States Forest Service

"The Value of Outdoor Recreation in the Social Life of the Community"

C. L. Glenn

Director, Physical Education, Los Angeles City Schools

"Game Management"

Dr. H. L. Shantz

Chief, Division of Wildlife Management, United States Forest Service

AFTERNOON SESSION—2:00 P. M.

Field Trip for demonstration of use of fire fighting equipment by Los Angeles County. Visit to motion picture studios for ladies not wishing to make field trip.

EVENING SESSION—Visit to Griffith Park Planetarium

FRIDAY, APRIL 18

Field trip—from 9:30 A. M. to 4:00 P. M.—to the famous San Dimas Experimental Forest

SOLVED--THE MYSTERY OF ROSS'S GOOSE

Eighty Years of Search at Last Has Revealed
the Nesting Grounds of This Unique Bird

By B. W. CARTWRIGHT

Photographs by Angus Gavin



FOR hours which seemed more like weeks and months, Angus Gavin and Ernest Donovan battled their way last summer up an unmapped tributary of the Perry River.

Four Eskimos with their boat followed them. The midnight sun, familiar to Arctic summers, shone brightly.

As they reached a calm stretch of water, they hoisted sail and pointed their bow in the direction of an island-dotted lake discernible in the distance. Then one member of the party noted a small white goose overhead. It was no larger than a mallard and its wings were tipped with black. It was flying towards the lake.

Fatigue was forgotten. New energy flowed into their veins. Here indeed was the object of their search—the elusive Ross's Goose—actually pointing the way to its hitherto unknown breeding grounds.

As they entered the long narrow lake, they trained their binoculars on the nearest island, where, scattered over the surface were myriads of tiny white dots, resembling ptarmigan in winter garb. Geese were winging about in every direction, and as their boat grounded on the stony beach, more birds rose and flew over them, protesting loudly at man's first intrusion upon their nesting territory.

Crawling on their bellies to the nearest nest, the men lay still to await developments. Soon the birds forgot their alarm and returned cautiously to their nests to resume incubation duties. For eighty years explorers



This is the first photograph ever taken by white men of Ross's Goose nesting on the stony beach on its newly discovered Arctic breeding grounds

and naturalists had looked in vain throughout the northern Arctic for this very sight—the supreme thrill of seeing the Ross's Goose on its nest—knowing that the last major mystery of its kind in North American ornithology had at last been solved.

To Angus Gavin, manager of the Hudson's Bay Company post on Flagstaff Island in Queen Maude Gulf, Arctic Ocean, and to Ernest Donovan, manager of the King William Land post, 200 miles eastward, goes the honor of being the first white men in the world to see this bird in its native haunts. The discovery was made at approximately 67° 45' north latitude and 102° west longitude, about 650 miles northwest of Churchill and twenty-five miles southeast of Chester Bay, Queen Maude Gulf.

Thrilled by their discovery, the tired men stopped on a nearby island to eat and secure much-needed sleep. It was July 2, 1940, and the time was 1 a.m. Because daylight is continuous north of the Arctic Circle at this time of year, sleep was difficult, and the men finally returned to the island to secure specimens of the birds and their eggs and to take a number of photographs.

The nests were about a foot in diameter and built on a grassy base on rock well lined with white tuff. The nesting cavity was about five inches across and about two and a half inches deep from the top of the downy rim. From two to six creamy white eggs were imbedded within. Some nests held two or three eggs, several held five or six, but four eggs comprised the most common clutch in the fifty-odd nests examined on three islands.

Incubation was advanced from five to ten days, as the Eskimos soon discovered after gathering several eggs and proceeding to eat them raw. This made little difference to the natives, despite the presence of the well-formed embryos, but to the Eskimo food is food. Each egg devoured was worth its weight in gold as a museum specimen.

Two skins of the Ross's Goose were preserved as specimens and five eggs were end-blown. All were recently brought down out of the north, together with the news of the discovery, by Donovan and deposited in the National Museum of Canada at Ottawa.

Since earliest times, this unusual bird, first described as the "Horned Wavy" by Samuel Hearne in 1795, has been associated with officials of the (Continuing on page 204)



Natives devouring raw eggs of Ross's goose—each egg worth its weight in gold as a museum specimen, because for over eighty years explorers and naturalists had searched in vain for the nests of this bird



From two to six creamy white eggs were in each of the fifty nests examined,—but four comprised the most common clutch

NURSE CROPS -- A NEGLECTED ALLY

By S. O. HEIBERG and H. H. TRYON

FORESTRY today means to many people the planting of small trees on idle land. This concept appears to be very widely held among laymen—and to a rather disturbing extent among foresters as well.

Of course the reason for this opinion is clear. The planting of open areas usually appears a simple and not overly expensive task. But in reality the successful reforestation of barren land is a distinctly difficult and complex undertaking. It is to be hoped that this will be realized more and more both by the advocates of clear-cutting and planting and by those ardent conservationists who are still urging the establishment of solid, coniferous plantations by the reforestation of idle farm land.

Tree planting constitutes an important economic problem and one which requires careful advance study. The attendant difficulties may be compactly summarized as follows:

Forest soils and local forest climates differ markedly from those prevailing in the open. A given species which will develop satisfactorily under the protection of the forest canopy may stagnate and die if set in the open. Extremes of air temperatures are considerably greater outside the forest than within, causing the small plants to expend much energy in unduly hard work. Occasionally these temperature extremes (the low ones in particular) will kill the young trees. We are all familiar with the effects of late spring frosts upon young leaders. The same stock, set under more sheltered conditions, would ordinarily suffer no damage. Under high external temperatures, stock set in the open frequently begins bud and cambial activities earlier than under shelter, and is, in consequence, far more liable to frost damage. Sometimes the difference of but a few days may mark

the dividing line between living and dead leaders. And early fall frosts occasionally have the same effect on the immature buds, although less frequently or severely.

Since snow remains longer and is more evenly distributed under the forest than in the open, it often guards the small plants against parching by wind or sun and it not infrequently prevents the ground from freezing. In the open, snow distribution may be very uneven, fre-



In this twenty-year old Norway spruce plantation the new shoots have been killed each year by late spring frosts, because of lack of protection of any kind

quently leaving the young trees and the soil quite bare, causing desiccation and deep frost penetration. Such exposure may even kill some of the plants, but the attendant frost heaving, which is so often seen on areas exposed in the late winter to intermittent freezing and thawing, can cause very serious loss. It is of course at its worst on heavy soils, but it often occurs even on coarse sand if enough moisture be present. The exposure to high, hot winds during the growing season is far greater in the open, and if the supply of soil moisture becomes too low, the parching effect is fatal.

As to precipitation, more rain reaches the ground in the open than under the crowns. The sparse and lesser vegetation usually found on open areas produces considerably less transpiration than takes place in the forest but despite this the upper horizon of the more exposed soils is usually considerably drier than it is under the trees. In fact, the moisture content on exposed areas frequently becomes so low that the tree roots cease grow-

ing, even during the season when they normally should spread. Not infrequently this soil dryness descends to below the minimum necessary for survival, in which case plants in the open will be found dying while those under shelter will survive. In addition the evaporation from both plants and soil may be greater in the open owing to the usually lower relative humidity there prevailing.

The question of soils plays a large part. In the forest one or more tons of organic matter an acre are added to the soil yearly. In the processes of decomposition, various valuable nutrient elements are returned in available form to the upper horizons. In the open, by contrast, we may have precisely the same substrata but the annual deposit of organic matter occurs in very small measure and the humus layer is either deteriorated and deficient or wholly lacking. The absence of protecting underbrush or slash creates an unfavorable environment for the soil fauna, usually resulting in their death or migration. Such

exposed soils lose porosity and become compacted, requiring perhaps two or three hours to absorb four inches of rain, while a good forest mull will take up this amount in about thirty seconds. The comparative difference in surface run-off, erosion and loss of top soil should be obvious.

All of the foregoing somewhat elementary details merely emphasize the fact that the site which is protected by trees offers a vastly better opportunity for successful tree planting than does an open, exposed site. It is unreasonable to expect a species which will develop in excellent fashion under a forested environment to perform in similar fashion on an open, exposed area. Nature's treatment of abandoned, open lands proves this conclusively. It lets the pioneer species—the birches, aspen, certain pines, cherry, juniper and so on—which are hardy and less requiring, be the first occupants of such sites. Later, when these species have established themselves and are beginning to create a new forest environment, the more requiring species, such as spruce, many of the valuable hardwoods, and even some of the pines will move in under the protection of this natural nurse crop.

The pioneer overstory consists usually of intolerant trees often widely spaced, while the second story consists normally of medium tolerant or tolerant trees with fine limbs and straight



Here Nature has provided her own nurse crop, and these young red spruces are developing unharmed by frost and other adverse climatic factors under a light overstory of paper birch

forms due to the half shade and protected environment in which they grow. Organic matter is again returned to the soil and with it and under the cosy microclimate of the forest floor the soil fauna multiplies and gradually a normal forest soil is again formed.

When a formerly cultivated area is abandoned, nature takes it in hand and sustains thereon successive associations of herbaceous or woody species of varying degrees of value. The occurrence of these successions appears to be inevitable and unavoidable except at considerable expense. They obviously serve a necessary preliminary purpose in fitting the ground for more valuable associations. The volunteer stands of cherry, gray birch, aspen



In an eleven-year old red pine plantation on the Pack Forest at Warrensburg, New York. Slash, placed on an outworn, abandoned field, has benefited the tall trees at the right, as shown by the white rod, five feet tall

and red maple common on burned areas and the red cedar, gray birch, sweet fern, red maple association common on abandoned fields in parts of New York are good examples. It is nature's practice to make every effort to rebuild devitalized soils. Leaf-analyses made at the Black Rock Forest in New York indicate that the weed species making up these primary successions are more "efficient" feeders than are some of our commercial species and play a large part in the re-nitrification of vitiated soils.

In central and northern Europe, it is common practice to use "nurse crops" of birch, alder or larch to prevent frost damage on open reproduction areas. After a few years these pioneer crops are underplanted with such species as beech, silver fir (*A. pectinata*), oak or Douglas fir, which are especially susceptible to night frosts. The comparatively light shade cast by these nurse crops serves to restrain rampant growth of the grasses, to supply organic matter and to maintain more uniform

climatic conditions. By the time the commercial crops have reached a height at which they are threatened with damage by the nurse crop the latter trees are gradually removed. Frequently in Germany, where until recently considerable parcels of sub-marginal farm land were being acquired for addition to the numerous state forests, such lands carried little but grass. On such blank areas it was common practice to plant a complete pioneer crop on a rather wide setting in order more quickly to re-establish true forest conditions.

The nurse trees may be left in the stand but in most cases should be removed when they hinder the development of the main crop and when they can be removed at a profit. A gradual removal of the nurse crop will be better than taking it all at once, since a sudden exposure of the main crop may cause too much of a shock. Economic conditions, however, may not always permit this. The main thing is that the nurse crop will not harm the main crop for several years. Part of the nurse crop can often be left as fillers in the stand and be thinned out as the stand is progressing, or even left to the final cut.

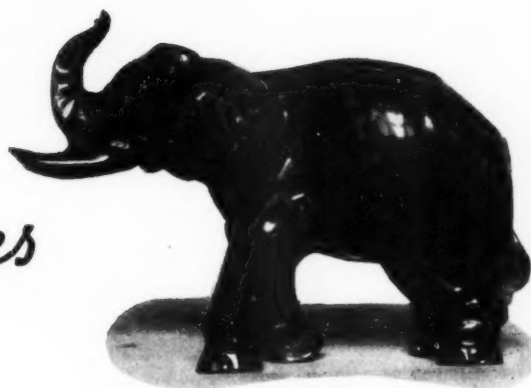
In some cases a stand of pioneer species is already established on the planting area. They may be very unevenly distributed and from a utilization point of view seem rather useless. Foresters are therefore sometimes tempted to clear cut the entire area before planting the desired species. Here is a common error, for the protecting values of these pioneer trees should be carefully considered before the area is given over to the unrestricted play of the climatic factors. If the species to be planted is hardy and in itself has pioneer qualities as, for example, red pine, there would be little reason to put much emphasis upon the protecting value of a nurse crop. But if the species to be planted can take advantage of the shelter afforded by the existing trees, it is better to use them as a nurse crop. Frequent thinning in the nurse crop would be necessary; sometimes partial girdling can be profitably carried out. Girdling has the advantage of a gradual effect upon the understory. Slow change is a golden rule in silvicultural work.

On the Pack Forest in the Adirondacks a red pine plantation was established in 1929 on a level area, a lacustrine, coarse sand, which had been farmed for many years and had lain idle about ten years before planting. The plantation grew very well during four or five years; then practically all trees slowed up in height growth—just at the age when a normal plantation begins the fastest growth of its entire life. The needles turned yellow and the new shoots produced only short needles. There was no sign of insect or fungous attack. In 1934 a layer of fresh white pine slash was placed between the trees on a plot in the plantation. By the next year the yellow color of the needles had changed to a fresh green. Growth picked up thereafter, long green needles were formed, and today the treated plot is a healthy, vigorously growing stand in contrast to the surrounding plantation which continues its poor development. The average height growth of red pine thus treated compared with untreated for the last three growing seasons is respectively 1.47 feet and 0.40 feet.

In 1937 slash was also spread beneath stagnating white pine, Norway spruce, and white spruce on the same site with corresponding results. Treatment with slash as outlined can be used only under special conditions in practice. But it emphasizes both the value of leaving slash on soils deficient in organic matter and the great need of supplying open areas (*Continuing on page 205*)

AMBER—*Gold* *from Ancient Trees*

By FRANK A. MONTGOMERY, JR.



Elephant of pure amber

ALONG the wind-swept shores of the Baltic Sea, where the bold headlands of the Samland march down to the pounding surf, there is found a product which, since earliest times, has intrigued the mind of man and formed the basis for countless tales of mystery. For here, on this rugged Prussian coast, washed in on the crests of the billows after the "amber winds" or mined from the "blue earth" near the water's edge, is found the semi-precious substance called amber.

"Gold of the Sea," the ancients named this fascinating material, and even before the adventurous traders of the Roman Empire bartered for it among the wild Germanic tribes, Stone Age people knew of and made from amber amulets and trinkets to satisfy their savage desire for a bit of beauty. To far off China, even, the precious material was carried from Burma by ancient merchants, there to add to the splendor of the courts of the Dragon Empire.

The Romans especially prized amber, with its delicate veinings and lustrous, yellow finish. So great was

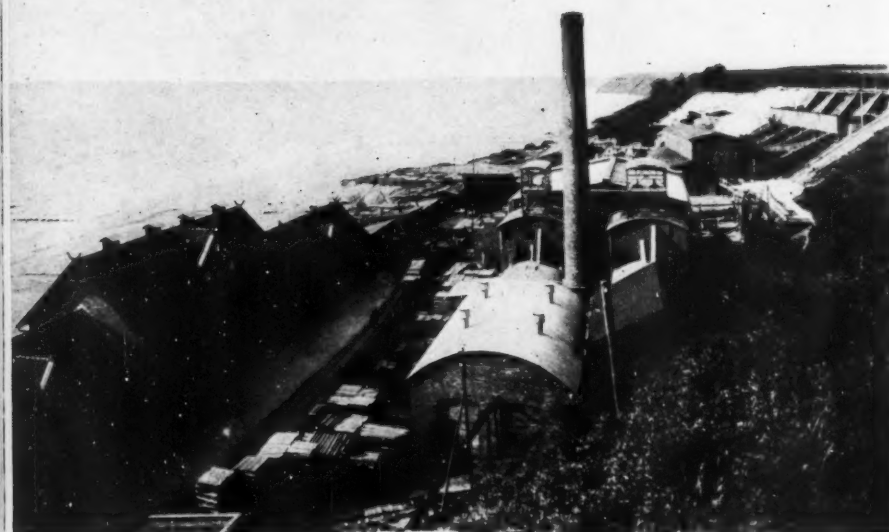
the demand for it that during the time of Emperor Nero special expeditions were dispatched to the far northern sea and to Sicily to bring back great quantities to Rome. Before them, the Phoenicians and Assyrians traded in amber, valuing it highly, and, as was often the case with other peoples, frequently holding it in higher regard than gold.

Down through the ages which have come and gone since the first dwellers along the Baltic Sea found and prized this clear, golden product, the desire for the beauty that is peculiar to amber has remained undiminished. Today the demand for it exists wherever there are people. Vast quantities soothe the fear of sickness, death and plague in savage hearts; others cherish it for the charm of its appearance in jewelry and carvings and for its usefulness in industry and the arts.

But it is not alone the appearance and usefulness of amber which have for so long a time intrigued the minds of all who know of it. The manner of its origin in the



Until recent years, the only amber produced was "fished" out of the sea by natives with long-handled nets, similar to our crab-nets. Today, however, most amber is mined



dim, uncharted past has always exerted a peculiar fascination. Found upon the sandy beaches of the Samland coast, in Prussia, amber was obviously not of the sea, for within its clear depths the remains of terrestrial growths and organisms have always been known to be present. No doubt many of the ancients noticed these peculiar substances trapped within the amber, but it was not until Pliny, the great Roman naturalist and historian, studied the phenomena that written mention was made of the origin of amber.

But many theories were advanced, both prior to and after Pliny's explanation as to how and when amber was formed. Up until about sixty years ago, in fact, many reliable scientists believed that deep within the Baltic Sea great springs of petroleum bubbled up to the surface, where the floating oily seum was gradually evaporated to form the lumps of amber found cast upon the precipitous shores after the "amber winds," storms blowing across the Baltic at certain times in winter. Opponents of the theory, however, discredited it on the grounds that there were no marine animals, such as small fishes or the like, imprisoned in the masses of amber while, on the other hand, specimens were frequently discovered in which were perfectly preserved pieces of wood, insects, flowers, leaves, bark and even feathers, such remains pointing irrefutably to formation on land.

Pliny, in writing about amber, said he was convinced that the product was nothing more nor less than coagulated vegetable juice, a resin which had once been liquid. This, he went on to say, could be proved in three ways. First, when rubbed vigorously, amber smelled like pines; second, it burned as well as resinous wood; and, third, pieces of bark, leaves, flowers and insects were present, all of which pointed to amber's origin in a forest

Upper—The bold headlands of the Samland march down to the Baltic sea, where amber is found

Middle—The State Amber Works plant is almost on the beach

Lower—The "blue earth" is brought to the surface, dumped, and the lumps of amber washed out with powerful hydraulic "guns"

of some sort. He also believed that across the Baltic, in a region far beyond the horizon where the foot of man had never trod, were islands on which grew the great pines which produced the amber. From these pines, it was his opinion, great drops of resin were continually falling into the waters of the Baltic, to be carried across the sea by the influence of wind and wave and deposited upon the amber coast.

Pliny was right in his theory about the way amber was formed; he erred only in his belief of the manner in which the substance was carried to the shores of the Samland. But, truthfully speaking, it was not until comparatively recent times that science finally succeeded in piecing together all the many parts of the riddle which has always, more or less, surrounded amber.

According to the now generally accepted belief, there existed some seven or eight million years ago during the Tertiary Period in that region later known as Prussia a period when the climate was much more temperate than at present. It was, in fact, sub-tropical, and in the warm, humid atmosphere great forests grew to maturity. In these forests were found many species similar to species of plants growing today. Among them were oaks, magnolias, laurels, olives, wax-myrtle, beeches, chestnuts, elms, willows, maples, and many kinds

of shrubs, mosses, lichens, and the like familiar today in various sections of the world. One of the largest and finest flowers found in amber to date belongs, so botanists say, to a species closely allied to the tea and camelia family of shrubs.

But in this great forested region, dominating the surrounding growth, lived a now extinct coniferous tree, similar to the redwoods of California. Towering hundreds of feet into the air above this Tertiary wilderness, these trees flourished in the sub-tropical climate, and from bits of wood found imbedded in amber, botanists have found a close relationship between them and our present pine trees of the South. For no one knows how many centuries these conifers existed in the forest of that time. Once the existence of such trees had been

established beyond reasonable doubt by a painstaking study of the actual wood, leaves, flowers and bark imbedded in the amber, the question in the mind of many investigators was the reason for the wholesale exudation of the resinous substance from the trees of that period which resulted in such vast amounts of amber being formed.

Authorities who have closely studied the question over a period of years say that the whole primeval forest evidently suffered from "succinosis"—an action that in its time produced far more resin than was normal. In that sense hardly a sound tree could have been found in the entire ancient forest. To depict the nature of the ceaseless attacks upon the forest which drove the trees into producing such wholesale quantities of resin—later amber—the following from the literature of the German State Amber Works is given:

"Old, dead trees in the amber-forest, struck by winds, would sink to the ground, brushing against and breaking the limbs of other trees in every direction, and finally crashing down with the full weight of their immense bodies upon everything that opposed itself to them on the side where they fell. With terrific force they would knock against neighboring stems, tearing off great strips of their bark and, in places, injuring the inside wood itself, so that the resin would be formed in unusual

quantities. Violent gales and tempests would pass over the amber-forest, wreaking the worst kind of havoc within it. A whirlwind would catch the mighty treetop, twisting off the stem in a few seconds; the strongest trees would be snapped above the ground like blades of grass and hurled about in wild confusion like so many matches of tremendous size.

"At other times an oppressive heat would prevail in the amber-forest of long ago, and violent thunderstorms would discharge over it. A treetop, or remaining stump of an old limb, might be struck by lightning and set afire. The fire would not only spread over the stem originally struck, but would run along the ground and consume the dry materials deposited upon it. The resin on the forest floor, surrounded (Continuing on page 203)



Baskets of crude amber lumps, as recovered from the "blue earth." Most pieces are small, but some weigh up to thirteen pounds. Above are two lumps holding imbedded insects—clues to animal life in the ancient amber forests



From the fertile southern valleys rise the chaparral-covered mountains seen through delicate tracery of eucalyptus trees

Lloyd Cooper

California-Treasureland of Trees

Beginning with the founding of San Diego Mission, the first of twenty-three whose picturesque buildings and ruins now dot the coastal plain for a distance of 600 miles, the history of California is a story of romance and of rapid progress on a vast stage, with backdrops ranging from snow-clad mountain tops to burning deserts, from sage brush flats to towering forests, and with land elevations that rise from 276 feet below sea level to 14,494 feet above. All this has played a part in the shaping of man's destiny here.

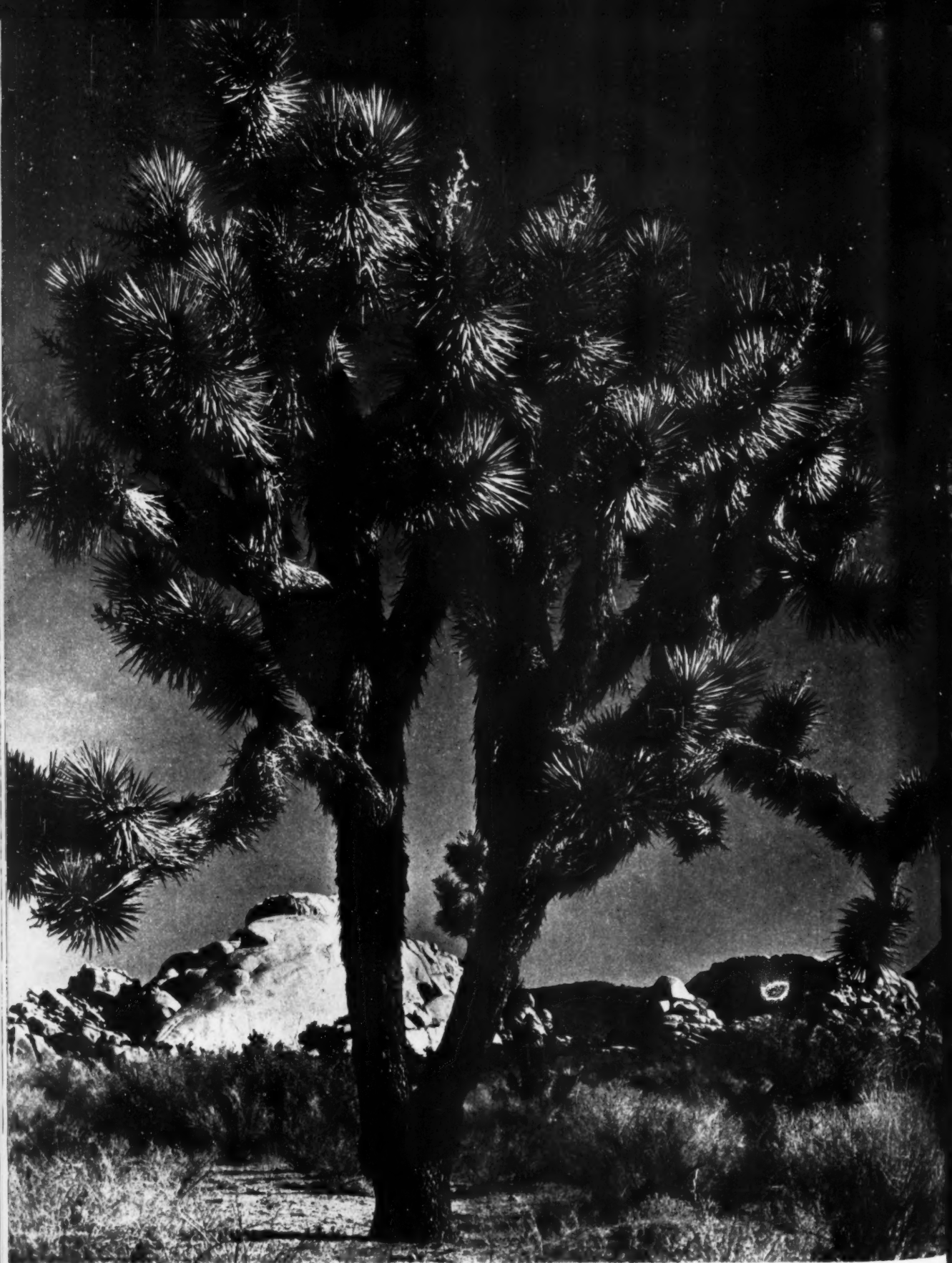
But to the settings of this living stage, it is the vegetation that lends beauty and wealth, and just as the variety of landscapes and climatic conditions have influenced man, so too, have they influenced the plant life by making it possible for a wide range of forms to exist. The trees of California show how true this is, and in these pages are pictured some of the divergent types of trees that grow here.

Californians believe in conserving natural resources, and are ceaseless in their efforts to preserve natural beauty. The numerous reservations, state parks, national forests and national parks and monuments, give proof of this. The Point Lobos Reserve pictured below is an example of natural beauty preservation. Called "the greatest meeting of land and water in the world" by no less an authority than the landscape painter Francis McComas, the chief feature of its rocky headlands is the scattered stand of gnarled and windswept Monterey cypress trees. Recognizing the unusual character of this bit of land and appreciating the rarity of its flora, Californians have made Point Lobos a reserve—a property held in trust for all time as nature designed it.

The world's only natural grove of Monterey cypress is in the Point Lobos Reserve near Monterey, California

Ernest Williams





Native only to southwestern United States, the weird Joshua tree has its area of greatest abundance in the Mojave Desert, California

Department of the Interior



So tall are the trees along the famous Redwood Highway, that when driving through them one's sense of proportion must be readjusted

Gabriel Moulin



Sugar pine is the tallest and most magnificent of all the pines, and with blue-green needles, its striking form is a characteristic feature in the forests of the Coast and Sierra ranges in Oregon and California. In California the stand is greater—approximately twenty million board feet

Hardly less picturesque than sugar pine, and almost as great in stature is the ponderosa pine, but this tree has a far wider range which extends from western Canada and California eastward to the Dakotas and West Texas.

No western pine has greater commercial importance than ponderosa, and in the State of California alone, the stand is estimated to be fifty-four million board feet

U. S. Forest Service





The Grizzly Giant stands in a grove of Bigtrees in Sequoia National Park, and, like so many natural wonders, staggers the imagination. Rising 209 feet in height, it is over 96 feet around at the base

Ansel Adams

Opposite Page, Upper—Yosemite Park tells a sequence story of tree life zones that start beneath the windswept peaks with spreading pine and fir a few inches high, passing through forests of towering sugar and ponderosa pine, live oaks, bay and poplars, to giant groves of sequoia 300 feet in height

Lower—In a land of sandy plains, jagged mountain peaks and blazing sunsets made fascinating by its challenge to endurance, the Twenty-nine Palms of the Colorado Desert in Southern California, stand alone and many miles from others of their kind



Torrey Pine, America's rarest pine, grows only at the mouth of the Soledad River near San Diego, and on Santa Rosa Island off the coast of Southern California

All Year Club of Southern California



National Park Service



REDISCOVERING THE TR

By RUSSELL D. DAIGLE



Fine roads now traverse the high Sierra country over which the heroic pioneers of the Forties broke trail with their covered wagons through the heavy snows. The sufferings of the Donner emigrants and their gallantry in meeting unspeakable conditions are now a part of the proud historic legend of the West. The monument shown above, erected at Donner Lake to honor those valiant ones, bears the inscription: "Virile to risk and find; kindly withal and a ready help. Facing the brunt of fate; indomitable—unafraid."

NEAR the Lake-of-the-Sky, high up in Tahoe National Forest of California, lies a stretch of primitive country that shared in building the old West. Here, some ninety years ago, the Emigrant Wagon Trail felt the strong tread of heavy boots—the footsteps of explorers, trappers, emigrants, miners, and then the overland muleskinners with their freight-laden wagons.

The way was not easy. Countless physical obstacles confronted the first comers seeking the Far West, particularly those who chose this short cut across the massive Sierra Nevada which courses nearly the length of California. Many a brave pioneer failed near the end of the trail despite his rugged determination to see the Pacific through the Golden Gate. But the most tragic failure of all emigrant wagon trains that attempted to fight their way across the Sierra was the migration of the Donner party.

No other epic of western pioneering is so filled with mental horror and physical suffering, with spiritual sacrifice and avarice, with the will to live and the willingness to die, as the blood-stirring account of the covered wagon trek under the leadership of George Donner, pioneer. Centuries from now the story will be a folk legend of the West.

The Donner emigrant party was organized in Springfield, Illinois, and pointed its oxen westward during the spring of 1846. A few unattached adventurers joined the party from time to time and by late summer, when the group reached the treacherous Utah salt flats, it numbered eighty-seven emigrants ranging from babes in arms to men approaching their seventies. Before the wagon train reached the eastern slopes of the Sierra, heat, thirst, exhaustion and violence claimed five of its number—normal losses for those times.

The emigrants rested by the lower Truckee River, and then, unaware of the treacherous winter weather ahead, struck out for the High Sierra short cut to the Sacramento Valley. Hungry and miserable, besieged by Indians, they stumbled up the boulder-strewn Sierran slopes, pressing their exhausted oxen, fighting

THE TRAIL OF THE PIONEERS

The Sierra Section of the Old Emigrant Wagon Trail, Which Brought Stark Tragedy to the Ill-fated Donner Party Nearly a Century Ago, is Retraced and Marked as a Monument to Our Early Pioneers

for every inch of the way. Snowstorms chilled their marrow; rains bogged their wagons. But still they pushed ahead—up the Truckee and on to the shores of Truckee Lake, now named Donner Lake. There they stopped to repair their bodies and restore their jaded spirits before tackling the granite-bound Emigrant Pass over the crest of the Sierra.

Then an early Sierra winter broke upon them with its cold, indomitable fury, and the frightful months that followed were filled with the horror of slow starvation, death and primitive cannibalism. Time after time, at intervals between storms, unsuccessful attempts to break through were engineered by the strongest who pitted their scant remaining strength against the white butresses of the gap that has since been named Donner Pass.

One heroic effort by five women and twelve men was in some measure successful, made so only by sustenance from the bodies of fallen comrades. Equipped with snowshoes roughly fashioned from oxen bows and rawhide, and guided by Charles Tyler Stanton, who had miracu-

lously made it through ahead of the main Donner party and returned with two Indian guides from Sutter's Fort, this pitiful band of seventeen set out over the pass around Christmas time. Beyond the summit, diminutive Stanton's last flicker of energy gave out and he fell behind. Urging the others onward with a silent wish for their Godspeed, he died as he had lived—a gentleman and a hero.

As each straggler succumbed, the barely living survivors turned to the necessary task of providing their gnawing stomachs with the only nourishment at hand. For nearly a month they struggled on, torn by mental anguish as much as by physical deprivation. Their Indian guides died on the tortuous trek, but the trail had been hopelessly lost long before they crumpled in the snow for the last time. Finally, on the border of the Sacramento Valley, the survivors found an Indian encampment—and acorn soup. Shortly afterward, the pitiful remnants of the party were guided to a family of white settlers who nursed the five women and two men



Following the old Emigrant Trail, a saddle caravan of California historians and foresters—twenty-one strong—set out last summer to explore the region and learn what they could of emigrant lore, buried for nearly a hundred years—a thrilling pack-trip of rediscovery!



The trailmarkers stop at the charred trunk of the Mother Pine, on the old Emigrant Trail near Springfield Flat



From his paint horse, Leader Wendell T. Robie recounts pioneer history, while Ranger John Hodgson and Harry Noyes Pratt tamp an Emigrant Wagon Trail marker in place



Two of the women members of the party—Jeanne Powell and Mrs. W. J. Lynch, watch while the men erect a marker at Mule Springs,—where 10,000 pioneer wagons passed

back to health and listened to their account of the serious plight of those who had stayed behind, east of the pass.

Spring came to the Sierra, and with the melting of the deep snow rescue parties fought their way through mud and water-choked gorges. Their route led eastward from Sutter's Fort, through Johnson's Ranch nestled by the Sierra foothills, then up the canyons and ridges along Bear River, over the high pass and down to the desolate makeshift cabins by Truckee Lake. There the rescuers were sickened by the sight of the many dead, but they found a spark of life still glowing feebly in the wracked bodies of a few members of the Donner party. These they brought out to the warm sunshine of the Sacramento.

Of the original complement, forty-seven emigrants survived to settle in the new land; five died before reaching the Sierra, thirty-four at Truckee Lake or in attempting to cross the foreboding mountains, and one pioneer died just after reaching the Sacramento Valley.

The living told stirring tales of heroism, sacrifice and the struggle for life. For instance, there was James Reed, banished from the wagon train out on the desert when he killed a fellow emigrant, although some said he committed the deed in self-defense. Reed crossed the Sierra ahead of the main group and then had the strength and courage and forgiveness to attempt repeated rescues during the dead of winter. Several times he braved the swirling snow to rejoin his family and former comrades, but the cold always turned him back. In the spring, by some miracle, his entire family was rescued by one of the relief parties.

Then there was Tamsen Donner, whose name will live forever in the history of the West. She might have escaped over the snow and mountains but her wifely devotion bade her accept starvation with her injured and dying husband, George Donner, the leader of the party. They died together not far from the shore of the lake now named in their memory.

The cry of "gold!" at Sutter's Fort had not been heard around the world in 1845, 1846, or 1847, so the emigrants who came to California during those years had little lust for sudden wealth. Their objective was the deep satisfaction that comes from building new homes and communities and of tilling virgin soil. The scant success of the Donner party in achieving that high purpose makes their valiant trek doubly tragic.

With the discovery of gold in 1848 the exodus westward began in earnest. Thousands of "Forty-niners" heaped their worldly wealth in covered wagons and whipped their mules and oxen toward the setting sun. But the stores of goods they brought were not enough to share with the settlers and miners already in the valleys and along water-courses of this new land. Then grew a thriving business in freight hauling.

The route of the teamsters followed the Donner Emigrant Trail to the promised land. Up the Humboldt River to Humboldt Sinks, and up the Truckee to Truckee Lake,—over the pass and down the headwaters of the turbulent Yuba River. Up again over Emigrant Gap and into Bear Valley and down Bear River and the ridges that bound Bear River. Past Nigger Jack Hill, Mule Springs and then ascending to (Continuing on page 206)

EDITORIAL



A CONSERVATION BOTTLE-NECK

IN WORLD WAR I, research to develop new and better uses of wood played a large and important role in helping this country and its allies achieve victory. Almost instant recognition was given to this field of research, large sums of money were made available for its acceleration and governmental agencies without loss of time launched upon the most intensive program of wood research of all time. The work centered largely at the Department of Agriculture's forest products laboratory at Madison, Wisconsin. The laboratory went on a three shift, twenty-four hour work day, and the possibilities of making our forest resources meet military needs in different and more efficient ways were explored with feverish seriousness. Within an incredibly short time, representatives of our foreign allies and of American manufacturers engaged in the production of war materials were making a beaten path to Madison. Intensified research was yielding information vital to the more efficient promotion of the war. As a result, millions of dollars were saved and a notable contribution was made to the winning of the war.

In strange contrast is the situation today as it relates to our national defense program. Singularly lacking is

any definite move to speed up governmental agencies to explore the utilization possibilities as applied to national defense needs of one of our greatest resources—wood. And this in spite of the fact that since the last war research has opened new and diversified possibilities in the field of wood utilization that hold promise of relieving bottle-necks due to shortage of other materials, of contributing to mass production of vital equipment, and of hastening fabrication processes for many needed articles.

During the past five years, Germany through concentrated research in this same field, has outstripped all other countries in making wood and its chemical derivatives strengthen its military might and its economic position. But here in this country, faced with an infinitely greater task than that of 1917, appreciation of the importance of the field seems to have lost its horizon. Though we have in the forest products laboratory at Madison the greatest plant in the world at which to do emergency wood research, no special projects or funds have been assigned it. Committed to help England, which is largely without forests, and confronted with economic and perhaps military war, the laboratory goes along on a peace-time basis. Why this bottle-neck?

PRAIRIE TREE BANKS

WITHIN a year after Franklin Roosevelt was first elected President, he proposed, among other conservation measures, the planting of trees on a large scale in the prairie states of the middle west. His thought was that belts of trees properly located and spaced would protect farm lands against droughts and wind erosion and would help make farm life more secure. The proposal was a daring and imaginative one. Immediately it became the target of wide criticism and ridicule. The idea of gridironing the prairie with strips of trees from the Canadian border to Texas was branded as idealistic, impracticable and a waste of money. Nevertheless, the President designated the U. S. Forest Service to formulate and initiate the project as a cooperative undertaking with the farmers. This it did in 1934 with a million dollars made available from federal emergency funds.

During the six years which have intervened, the project has been carried forward, although subjected from year to year to uncertainty of federal operating funds. The results shown are impressive. By study and selection of planting sites and of species of trees adapted to prairie conditions, foresters and farmers working together have successfully established belts of protective trees on over 22,000 prairie farms. Joined together, these shelterbelts would extend for nearly 14,000 miles and would embrace 110,000,000 living trees. Some of the early plantings are now affording adjacent crop lands protection against

the blowing away of soil and planted seed and thereby yielding the farmers substantial benefits. In addition, the trees are holding moisture in the surrounding soil, protecting stock from winter winds and summer heat, providing wood products and recreation areas for the rural community, attracting wildlife, and in general making the prairie farm more hospitable, livable, and dependable. They are indeed a bank on the farm, paying interest not only to the farmer and his family but to the whole community.

The prairie states planting project is no longer an impractical scheme. By its own showing and results after only six years, it ranks as the most notable example of forestation to be found in America. It has redeemed the faith of the President in trees and in the ability of American foresters to make trees grow under adverse conditions. The weakest point in the undertaking today is uncertainty of its continuance. From the beginning, the federal government's share of costs has been provided largely from WPA funds, which may be curtailed or cut off any year. In the light of the demonstrated services which these shelter forests are rendering in making more secure the economy of the prairie states and through them the economy of the nation as a whole, a sounder and more permanent method of financing seems now justified. Otherwise, the full potential benefits inherent in the project may be lost.

MOLDING WOOD TO MAN'S WILL

New Plasticizing Treatment May Open
Way to Use of Low - Quality Timber

By F. J. CHAMPION



Through the discovery of a new chemical treatment, which permits molding wood in plastic form, markets hitherto unavailable may be opened to the swamp oak of the South. Here a board is being immersed in the transforming chemical, which does not destroy or seriously change its structure. After soaking, the board is dried and then reheated to about 212 degrees F., when it becomes elastic and malleable, remaining so while the high heat is maintained, during which time it may be shaped permanently. Below—removing a board from the drying kiln, now ready for handling

OFTEN some research worker by methodical effort on a specific problem uncovers a side lead of such apparent promise that speculation takes a long detour, beckoning to him to forsake the main highway of his investigations and proceed, hop-skip-and-jump, along the new and attractive by-path that he has discovered.

In this category falls the recent discovery at the Forest Products Laboratory that wood can be made thermoplastic by a simple soaking treatment in a saturated solution of urea followed by a drying process.

The new plasticizing treatment came as an offshoot of investigations of the chemical seasoning of refractory woods—a development in itself of marked importance to forest utilization. In following this line of investigation W. K. Loughborough had occasion to soak pieces of swamp oak in a concentrated solution of urea and subsequently dry them. One day he found that this dry wood, when heated to about 212° F., assumed a rubber-like plasticity and remained plastic so long as the elevated temperature was maintained. Furthermore, bending, compression, or molded shapes imparted while the wood was hot were retained by the wood on cooling. In other words, the wood had become truly thermoplastic. It was apparent that he had something there. Wood had, for the first time, been made markedly plastic by simply soaking it in a concentrated aqueous solution of a single chemical and without destroying or seriously altering its structure.

The possible applications of this process that did not occur to Mr. Loughborough at once came with a little cogitation. Further, additional experiments seemed to broaden rather than limit the

AMERICAN FORESTS

possible number of applications. It was found that sawdust, soaked in urea, and heated to the proper temperature could be compressed and self-bonded into a sheet; urea-treated chips could be readily defibred and subsequently molded. With urea crystals selling in the neighborhood of four or five cents a pound, here apparently was another available low-cost plastic material to offer an outlet for low-grade and waste wood. Urea is one of the cheapest of the synthetic chemicals, being synthesized in large-scale production from coal, water, and air.

Demonstrations of the urea plastic look to the layman like a variety of sleight-of-hand. Strips of urea-impregnated dry hot veneer up to a quarter-inch in thickness, cut either across or with the grain, are readily bent into figure eights or rolled into close coils. More striking still, while in the plastic condition an oak strip with a half-inch square cross section can be taken in the hands and twisted into rope-like spirals.

By definition wood which is thermoplastic is wood that is plastic when hot. This means that urea-plasticized wood processed by the Forest Products Laboratory method when heated can be reshaped or remolded. While this is an advantage for some purposes, it is undesirable for other uses. Now, however, a modification of the treatment promises to make the wood, once softened and shaped, non-plastic on reheating. Details of this process will be available after it has been further developed and made the subject of public patent application.

The physical properties of the treated boards or sawdust which has been molded in a hot press are promising. The color is characteristically black or grey. Although the material is too hard to nail, it can be bored for screw holes, sawed, and machined. A decorative facing of veneer can apparently be applied without difficulty, using the urea-lignin plastic formed in the wood as a bonding material, and no difficulty is anticipated in the application of paint coatings. Furthermore, the non-corrosive character of the urea-plasticized wood, so far as metal fastenings are concerned, is a virtue inherent in its inception.

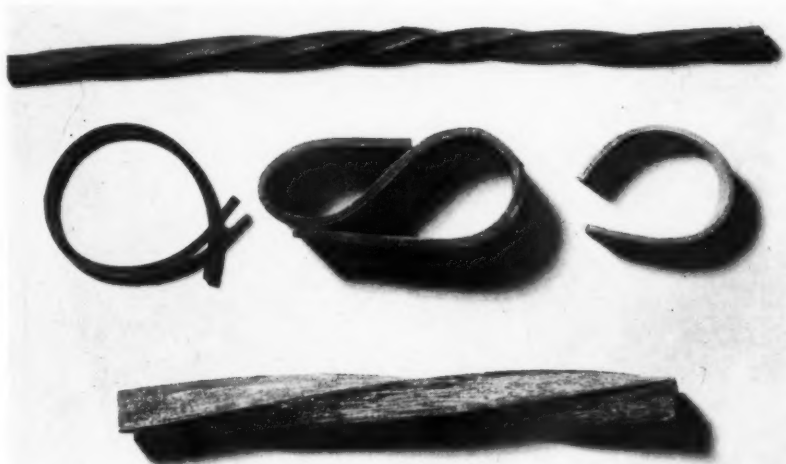
The compressed wood waste plastic sheet material exhibits strength considerably greater than that of uncompressed wood. As with any new process, speculation is most free before it has been subjected to semicommercial tests or to the hard realities of production. The process may prove useful in the production of bentwood

furniture and in the pressing of wood costume jewelry and novelties, or more important from the standpoint of tonnage uses of low-quality material, in the making of core stock, large panels, and cheap building boards.

Again, the new plastic wood might be used in the pro-



Twisting a piece of the treated wood. Below—Samples of swamp oak after treatment—with all the characteristics of true plastics. Bent, twisted or molded while still hot, they harden and remain the same on cooling



duction of compressed heavy-duty flooring, battleship decking, table tops, or doors. The apparent adaptability of the plasticized wood or of the compressed waste-wood plastic to cheap cores overlaid with finish veneers seems to outline a considerable field of usefulness in various paneled products.

The new plastic studies were initiated with blackjack, overcup, and southern red and white oaks, but additional tests with such woods as Sitka spruce and bigberry juniper have indicated that the treatment will work with softwoods as well as hardwoods. Like the parent project on chemical seasoning the possible benefits of the plasticization work are visualized in terms of conversion wastes and the utilization of low-quality second-growth timber.

AMERICAN BIG TREES

The following trees are the largest of their species reported up to March 1 in The American Forestry Association's campaign to locate and preserve the giant specimens of American trees. The challenge to all tree lovers is to locate and report trees larger than those listed, if they exist. Reports on giants of species not listed are also desired. Send all information to The American Forestry Association, 919 17th St., N. W., Washington, D. C.

| <i>Species</i> | <i>Circumference at 4½ feet</i> | <i>Spread</i> | <i>Height</i> | <i>Location of Tree and Nominator</i> |
|--------------------|-------------------------------------|---------------|---------------|---|
| ASPEN | 10'2" | --- | --- | Nanti National Forest, Utah. J. W. Humphries, Supervisor. |
| ASH | | | | |
| Black | 16' | --- | --- | Albert Morrill Property, Albemarle County, Virginia. G. M. Dillard, Scottsville. |
| Blue | 3'1" | --- | --- | Fountain Park, Piqua, Ohio. John Pickin, Dayton. |
| White | 15'5" | --- | --- | Hockessin, Delaware. William S. Taber, Dover. |
| BEECH | | | | |
| American | 15'10" | --- | --- | Cannon, Delaware. William S. Taber, Dover. |
| Copper | 13' | --- | --- | Convent of the Visitation, Washington, D. C. |
| BASSWOOD | 17'3" | --- | --- | Near Coldwell Corners, Delaware. William S. Taber, Dover. |
| CEDAR, Western red | 62'8" | --- | 100' | Near Lake Quinalt, Olympic National Park, Washington. F. W. Mathias, Hoquiam. |
| CHERRY | | | | |
| Black | 15'8" | 75' | 60' | Worton, Maryland. F. W. Besley, Baltimore. |
| Sweet | 8' | 40' | --- | Old Portage Trail, Akron, Ohio. Fred Smoyer, Akron. |
| COTTONWOOD | 29'8" | 70' | 55' | Near Clyde Cover Ranch, Thermopolis, Wyoming. O. F. Ludtke, Thermopolis. |
| CYPRESS, Bald | 42' | --- | 126' | Near Sanford, Florida. Devereux Butcher, Washington, D. C. |
| DOGWOOD, Flowering | 5'8" | --- | --- | L. F. Ventress Property, Woodville, Mississippi. J. R. Hamilton, Woodville. |
| ELM | | | | |
| American | 28' | 97' | 147' | The Wethersfield Elm, Middletown, Connecticut. |
| Red | 7'2" | --- | 90' | Dr. Nelson W. Barker Property, Rochester, Minnesota. Dr. Nelson W. Barker. |
| Winged | 14'6" | --- | 105' | Near Madison, Alabama. Thomas Z. Atkeson, Jr., Washington, D. C. |
| FIR | | | | |
| Douglas | 38' | --- | --- | Near Elbe, Washington. Charles Lutkins, Elbe. |
| White | 17'2" | --- | 114' | Priest River Experimental Forest, Idaho. Elers Koch, Missoula, Montana. |
| GUM | | | | |
| Black | 11'2" | 71' | 77' | College Park, Maryland. F. W. Besley, Baltimore. |
| Red | 14'7" | 71' | 101' | Near Easton, Maryland. F. W. Besley, Baltimore. |
| HACKBERRY | 12'4" | 68' | 72' | Near Vinton, Maryland. F. W. Besley, Baltimore. |
| HEMLOCK, Western | 16'9" | --- | --- | Kaniksu National Forest, Idaho. Elers Koch, Missoula, Montana. |
| HOLLY | 7'10" | --- | --- | Wicomico County, Maryland. Harry Ericksson, Had-donfield, New Jersey. |
| HORSE CHESTNUT | 10'10" | 61' | 55' | Near Collington, Maryland. F. W. Besley, Baltimore. |
| JUNIPER | | | | |
| Sierra | 40'11" | --- | 80' | Stanislaus National Forest, California. J. R. Hall, Sonora. |
| Utah | 21'6" | --- | 35' | Logan Canyon, Utah. R. P. McLaughlin, Logan. |
| KENTUCKY COFFEE | 11'1" | 71' | 76' | Near Hickory, Maryland. F. W. Besley, Baltimore. |
| LARCH, Western | 23' | --- | --- | Lolo National Forest, Montana. Elers Koch, Missoula. |
| LOCUST | | | | |
| Honey | 13'5" | --- | --- | Broadkill Neck, Delaware. William S. Taber, Dover. |
| Black | 12'11" | 67' | 73' | Fell Property, Baltimore, Maryland. F. W. Besley, Baltimore. |
| MADRONA | 19'2" | 70' | 70' | Trinity National Forest, California. A. G. Brenners, Weaverville. |
| MAGNOLIA | | | | |
| Grandiflora | 11'10" | --- | --- | H. H. Carter Property, Hampton, South Carolina. Cleary M. Haithcock, Badin, North Carolina. |
| Cucumber | 7'11" | 36' | 92' | S. C. Masson Property, Baltimore, Maryland. F. W. Besley, Baltimore. |

| <i>Species</i> | <i>Circumference at 4½ feet</i> | <i>Spread</i> | <i>Height</i> | <i>Location of Tree and Nominator</i> |
|----------------------------|-------------------------------------|---------------|---------------|--|
| MAPLE | | | | |
| Bigleaf | 9'6" | --- | --- | Snohomish, Washington. Anton Kratz, Arlington. |
| Red | 11'6" | --- | --- | Nantahala National Forest, North Carolina. C. A. Rowland, Jr., Gainesville, Georgia. |
| Silver | 14'9" | 84' | 88' | Wallace Williams Property, near Elkton, Maryland. F. W. Besley, Baltimore. |
| Sugar | 16'10" | 82' | 80' | W. F. Willres Property, North Kingsville, Ohio. Andrew Carpenter, Ashtabula. |
| MULBERRY | 23' | --- | --- | Parkersburg, West Virginia. Miss C. E. Aumiller, Washington. |
| OAK | | | | |
| Black | 21'10" | 123' | 98' | Near Cumberstone, Maryland. F. W. Besley, Baltimore. |
| Bur | 23'8" | 95'6" | 124' | Near Warsaw, Indiana. H. A. Woods, Indianapolis. |
| California Valley | 28'3" | 153' | 96' | Sir Joseph Hooker Oak, Chico, California. Lloyd G. Ingles, Chico. |
| Canyon Live | 36'3" | 130' | 60' | Angeles National Forest, California. G. Armstrong, Los Angeles. |
| Chestnut | 19'10" | 136' | 98' | Near Easton, Maryland. F. W. Besley, Baltimore. |
| Chinquapin | 4'6" | --- | --- | New Burlington, Ohio. John Pickin, Dayton. |
| Gambel | 15'8" | --- | 45' | Deep Creek, Washington County, Utah. R. P. McClaughlin, Logan. |
| Live | 35' | 168' | 178' | Near Hahnville, Louisiana. Charles Genella, Hahnville. |
| Overcup | 14'10" | --- | 75' | Patuxent Research Refuge, Bowie, Maryland. L. C. Morley, Bowie. |
| Post | 12'8" | --- | --- | Piney Grove, Delaware. William S. Taber, Dover. |
| Red | 19'4" | 96' | 85' | Deer Park, Maryland. F. W. Besley, Baltimore. |
| Southern Red | 13'4" | --- | --- | Chattahoochee National Forest, Georgia. C. A. Rowland, Jr., Gainesville. |
| Swamp (Q. prinus) | 30'1" | --- | 110' | Near Sandhill, Mississippi. Z. Waters White, Wilmar, Arkansas. |
| Swamp White | 8'7" | 58' | 79' | Near Savage, Maryland. F. W. Besley, Baltimore. |
| Water (Q. nigra) | 18'10" | --- | --- | Allendale County, South Carolina. Cleary M. Haithcock, Baden, North Carolina. |
| White | 27'8" | 165' | 95' | Wye Mills, Maryland. F. W. Besley, Baltimore. |
| Willow | 16' | --- | --- | Dover, Delaware. William S. Taber, Dover. |
| OSAGE ORANGE | 17'11" | 78' | 65' | Near Carmichael, Maryland. F. W. Besley, Baltimore. |
| PECAN | 21'4" | 145' | 135' | Assumption Parish, Louisiana. Sam Mims, Baton Rouge. |
| PERSIMMON, American | 7'1" | 49' | 45' | E. Emma Davis Property, near Cambridge, Maryland. F. W. Besley, Baltimore. |
| PINE | | | | |
| Loblolly | 16'7" | 105' | 84' | Near Carmichael, Maryland. F. W. Besley, Baltimore. |
| Pitch | 7'8" | --- | --- | Oconee County, South Carolina. C. A. Rowland, Jr., Gainesville, Georgia. |
| Ponderosa | 21'11" | --- | 175' | Columbia National Forest, Washington. K. P. Cecil, Vancouver. |
| Shortleaf | 9'7" | 71' | 41' | Murray Estate, Owensville, Maryland. F. W. Besley, Baltimore. |
| Sugar | 31'8" | --- | 200' | Stanislaus National Forest, California. J. R. Hall, Sonora. |
| Table Mountain | 6'10" | --- | --- | Chattahoochee National Forest, Georgia. C. A. Rowland, Jr., Gainesville. |
| Western White | 24'7" | --- | 160' | Near Rocky Run Creek, St. Joe National Forest, Idaho. Elers Koch, Missoula, Montana. |
| White | 11'6" | 40' | 159' | Near Merrill, Maryland. F. W. Besley, Baltimore. |
| REDWOOD | 47' (base) | --- | 364' | The Founders Tree—World's Tallest Tree, Humboldt County, California. J. F. Cunningham, Columbus, Ohio. |
| SEQUOIA | 101'6" (base) | --- | 272'4" | General Sherman Tree, Sequoia National Park, California. |
| SASSAFRAS | 15'2" | --- | --- | Rio Grande, New Jersey. Department of Conservation and Development, Trenton. |
| SERVICEBERRY | 7'1" | 40' | 42' | Sines, Maryland. F. W. Besley, Baltimore. |
| SILVERBELL | 10'2" | --- | --- | Joyce Kilmer Memorial Forest, North Carolina. C. A. Rowland, Jr., Gainesville, Georgia. |
| SPRUCE, Engelmann | 8'2" | --- | 80' | Flathead National Forest, Montana. Elers Koch, Missoula, Montana. |
| SYCAMORE, Eastern | 42'7" | --- | --- | Near Beverly, Ohio. H. E. Frye, Lowell. |
| TAMARIND, Wild | 8' | --- | --- | Key Largo, Florida. Charles C. Deam, Bluffton, Indiana. |
| TULIP | 26' | 117' | 79' | St. John's College Campus, Annapolis, Maryland. F. W. Besley, Baltimore. |
| WALNUT, Black | 28' | --- | --- | Bedford County, Pennsylvania. J. B. Graham, Hollidaysburg. |
| YEW, Oregon | 4'8" | --- | 32' | Clearwater National Forest, Idaho. Elers Koch, Missoula, Montana. |

CONSERVATION IN CONGRESS

Joint Congressional Committee On Forestry Submits Long Awaited Report

Interest in the legislative field of forest conservation centered last month in the report of the Joint Congressional Committee on Forestry transmitted to Congress on March 24 by its chairman, Senator John H. Bankhead of Alabama, and its vice-chairman, Representative Hampton P. Fulmer of South Carolina.

The Joint Congressional Committee on Forestry was appointed by the two houses of Congress in 1938 in response to a special message by President Roosevelt. In his message the President urged the appointment of such a committee to study the forest situation in the United States and to recommend for congressional consideration an expanded national program of forestry. The President stressed particularly an inquiry as to the sufficiency of present activities relating to forest protection, the extension of federal, state and community forests, and the need of invoking public regulation of private timberland owners.

Committee's Recommendations

In transmitting its report, the Committee made no proposal of federal regulation of private owners of forest land, leaving that question to the states, with some influencing action lodged in the Department of Agriculture through authority of the Secretary to withhold federal aid funds to states (Clarke-McNary Act) which do not provide for orderly forest practices on private lands within their borders. Recommendations of the Committee's report follow:

(1) Extension and intensification of cooperative protection against fire on private and state-owned forest lands by increasing the authorization of the Clarke-McNary Act for this purpose from \$2,500,000 to \$10,000,000, increasing the present appropriation by \$2,500,000 annually until the total authorization has been reached. Provided the respective states pass legislation providing for proper state, county and district fire protection and regulations governing minimum forestry practices to be administered as approved by the Secretary of Agriculture.

(2) Extension of the Clarke-McNary Act to provide for cooperative protection against forest insects and diseases on private and state-owned forest lands.

(3) Extension of the Clarke-McNary Act to authorize the furnishing of tree seed and seedlings to all land owners and authorization of such amounts as are necessary for this purpose.

(4) Continuation and expansion of the Norris-Doxey Cooperative Farm Forestry Act.

(5) Legislation authorizing cooperative sustained yield units to enable sustained

yield management of intermingled public and private forest lands, conditioned upon management and woods practices approved by the Secretary of Agriculture.

(6) A forest credit system to make long-term low interest rate loans to private forest and naval stores operators through existing federal lending agencies. Loans to be conditional upon both sound forest practices and sound investment policy.

(7) Legislation authorizing cooperation with the states in the encouragement and development of farm forest cooperatives, including financial aid in building and operating forest industries and wood-working plants.

(8) Legislation providing for leases and cooperative agreements with private forest land owners, communities, institutions and states.

(9) Extension and intensification of forest products research and forest management research provided that provision be made by the Secretary of Agriculture to get results of forestry research to the public-at-large, through existing state agencies, agricultural colleges and the public schools.

(10) Amendment to the State Forest Acquisition Act, making it applicable to institutions, communities and subdivisions of states. Also increasing the authorization to \$10,000,000 with appropriations at an increasing rate of \$2,500,000 annually.

(11) That national forest acquisition continue at its present rate and when possible be accelerated. That particular emphasis should be placed on blocking up present scattered areas of national forest land before additional national forests are established. That additional funds be appropriated annually to carry out this recommendation.

(12) Legislation authorizing an equitable system of financial contribution to local governments in lieu of taxes on forest land removed from the tax rolls through acquisition.

(13) More adequate protection against fire, insects and diseases on national forests.

(14) More intensified management of timber, forage, wildlife, recreation and watershed resources on national forests.

(15) Amendment to Section 9 of the McSweeney-McNary Forest Research Act authorizing an annual appropriation of \$750,000 for early completion of the Forest Survey of the United States.

(16) The investigation of apparent monopolistic purchasing of pulpwood by pulp and paper mills under a contract purchase system from farmers and other owners, price fixing of paper and other pulp products under trade practice rules

and regulations including cost of distribution.

The Chairman's Message

In presenting this report to Congress, Senator Bankhead said: "The time is ripe for the establishment of a real forest economy in this country which, as an important segment of the broad agricultural economy, will put to constructive use one-third of our total land area.

"No one today questions the worthwhileness of forest conservation—the wise use of timber and the other products and services of the forest.

"A forest economy is not a panacea for our economic and social ills. But, properly integrated with farm and range economies, it can help materially to increase rural employment and income, particularly in some of our most critical rural problem areas.

"The critical situation which threatens the physical and economic safety of the United States in a war-torn world accentuates the vital importance of a thorough and lasting solution of our forest problem.

"The variety and seriousness of the problems which must be overcome to make a forest economy arise in part from destructive forest exploitation; in part from natural, economic, and political circumstances more or less beyond the control of the individual owner.

"From the forest-resource standpoint, America is in transition from a philosophy of exploitation to one of planning and applying sustained yield management and orderly utilization. The knowledge necessary to accomplish this transition is as varied and complex as are the forest conditions and their economic and social relations."

Federal Regulation

Among the new bills introduced during the past month, two are of timely interest in the light of the recommendations of the Joint Congressional Committee on Forestry. These two bills, H. R. 3849 and H. R. 3850, were introduced by Representative Pierce of Oregon. H. R. 3849 provides for direct federal regulation of individual and corporate owners of timberland, while H. R. 3850 seeks to accomplish the same end by setting up a system of public regulation through the states with certain federal controls. The latter bill would implement the ideas and program of the Forest Service for bringing private timberland owners under regulatory control in the management of their forest properties. Designated as the "Forest Practices Act," the bill in its main essentials would empower the Secretary of Agriculture:

(1) to administer the act with the advisory assistance of a national forestry

(Continuing on page 186)



Trail Riders approaching Snowmass Mountain in the Maroon Bells-Snowmass Wilderness of Colorado

U. S. Forest Service

TRAIL RIDERS PREPARE FOR 1941

NINE great wilderness areas—the most beautiful primitive country between the colorful Appalachians in the East and the lofty granite peaks of the Sierra Nevada in the West—await the Trail Riders of the Wilderness this summer.

Beginning in late June, expeditions under the direction of The American Forestry Association will ride into the back country of North Carolina and Tennessee in the East, and Wyoming, Colorado, Idaho, Montana, New Mexico and California in the West. Ten separate expeditions are being organized.

The first party will assemble at Asheville, North Carolina, on June 22 for ten days in the Great Smoky Mountain National Park. The itinerary has been extended to include a night on the summit of famous Mt. LeConte. Tom Alexander will again be in charge of packing.

On July 8, the second party will get under way from Missoula, Montana, for twelve days in the great Flathead-Sun River Wilderness, that magnificent wild country south of Glacier National Park. It was in this land of rugged grandeur that the pioneer party of Trail Riders rode in 1933. Joe Murphy will return as chief guide and packer.

The rugged Spanish Peaks - Hilgard

Wilderness of Montana, in the Gallatin country west of Yellowstone National Park, will be the third area to be explored, the party getting away from Bozeman on July 16 for thirteen days. A greatly improved itinerary is developing. Walter Latta will serve as packer.

The fourth expedition will get under way from Sun Valley, Idaho, on July 23 for fourteen days in the magnificent Sawtooth Wilderness—a wild kingdom of serrated mountains, alpine lakes and pine forests. Claude Gillespie will be back as chief guide and packer.

Wyoming will be the scene of the fifth expedition, with the party coming together at Kemmerer on July 23 for twelve days in incomparable Wind River Wilderness. New trails are being developed in this land of glaciers. Stan Decker will be back as chief guide and packer.

The sixth expedition will return to the Maroon Bells-Snowmass Wilderness of Colorado, where the rugged mountain grandeur of the Rockies reaches dramatic heights. The party will come together at Glenwood Springs on July 25 for fourteen days. Mr. and Mrs. Rich Thomson will handle packing arrangements.

On July 30 Trail Riders will gather at Silver City, New Mexico, for twelve days

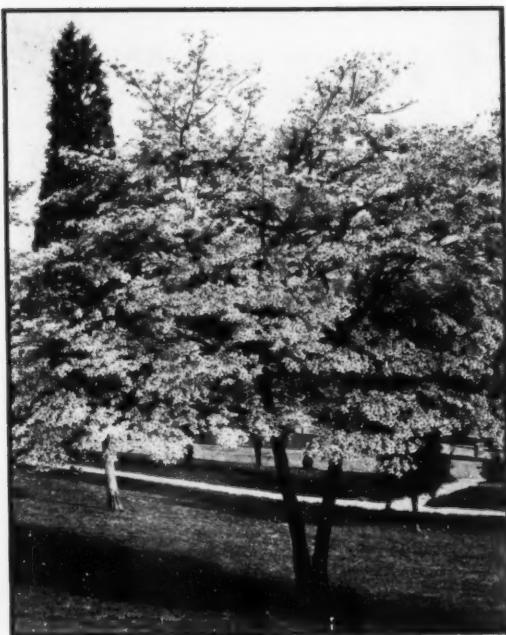
in the storied Gila Wilderness, a high country of timber and winding canyons. G. W. "Dub" Evans will guide the party for the seventh consecutive year.

The Flat Tops Wilderness of Colorado, one of the most surprisingly beautiful wild regions of the Rockies with its virgin firs and spruce, its alpine meadows, and its flat, broken peaks, will be the scene for the eighth expedition. Riders will come together at Glenwood Springs on August 12 for a thirteen day trip. Mr. and Mrs. Rich Thomson will be in charge of packing.

Then on August 22, in the back country of the Sequoia and Kings Canyon National Parks, in California, Trail Riders will again set out for the conquest of Mt. Whitney, highest mountain in continental United States.

On September 9, a second party will return to the Great Smoky Mountains, to follow the same itinerary as the July party.

Although not numbered among the ten trail riding expeditions for 1941, The American Forestry Association is developing a thirteen day canoe trip in the Quetico-Superior waterways of Minnesota—to fall in late July. Details of this unique trip will be available April 1.



Forest Service

YOUR SHADE TREES

FLOWERING TREES FOR STREET AND LAWN

By SAMUEL N. BAXTER

Dogwood—the glory of May

PERHAPS at the outset we should concede that flowering trees have no place on city sidewalks, where high crowns of shade, the paramount requisite, may be obtained with so many more desirable non-flowering trees.

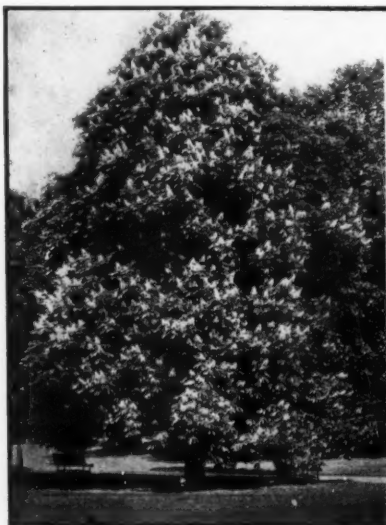
This may even apply to suburban sidewalks; certainly unless individual properties have considerable frontage, with spacious front lawns and an atmosphere where flowering trees would seem to fit in with the landscape development. Then, too, flowering trees are objected to for littering the sidewalk and highways with the seed and vandalism is encouraged by the seekers of the flowers or fruit. As-

suming that these objections, however, have all been weighed and it is still desired to use flowering varieties, it may be well to confine our discussion to shade trees familiarly known for their beautiful flowers, but where the flowers are more or less incidental—which limits choice to about five genera in the East. Of these five, three are well known,—the May flowering European Horse Chestnut (*Aesculus hippocastanum*), the June flowering western Catalpa and the May flowering yellow or black Locust (*Robinia pseudoacacia*). The Horse Chestnut, available in pink or white flowers, is exacting in soil requirement, slow in

growth and is subject to leaf blight.

The fragrance of the White Wisteria-like bloom of the yellow Locust is indeed alluring, though in some sections the borers will make life miserable for this otherwise desirable tree.

Very striking is the combination of simultaneous bloom in May of the red-flowering Horse Chestnut and the white flowers of the yellow Locust. This was carried out in a central grass plot of a suburban boulevard, but not so happily. The Horse Chestnuts practically stood still, while the Locusts grew like Jack's beanstalk, but became so maimed and knotty from borers that they had to come



The Horse Chestnut—magnificent in form and prolific in bloom



The Catalpa in flower—familiar sight on street and in gardens



The Paulownia, or Empress tree, in her royal cloak of lavender bloom

out. The Horse Chestnuts just refused to grow. It was the wrong location, for they love moist ground and are more at home where their low branches sweep the ground and shade their roots.

Our fourth flowering shade tree would be the Empress tree (*Paulownia tomentosa*). Of course, this has possibilities only under certain conditions. It could not be used in northern localities where it is not hardy. It would require room for development and the trunk located away from curbing. Consider, too, that it develops more or less dead wood, which makes pruning necessary. Although softwooded it is good for a century of growth if conditions are favorable. I have seen these trees four and five feet in diameter.

The Paulownia is of informal branching habit with heart-shaped leaves at times exceeding one foot in diameter. The upright large panicles of lavender, very fragrant flowers appear in early May before the foliage. In the south a beautiful floral combination is that of the lavender bloom of the Empress tree with an underplanting of the white Fringe tree (*Chionanthus virginica*).

The fifth tree is one that is uncommon and yet has great possibilities for street planting. It is the scholar tree (*Sophora japonica*), better known perhaps as the Japanese Pagoda tree.

The *Sophora* is given to low branching or the formation of a "basket head," but if seedlings were left longer in the seed beds, to discourage early lateral branching before transplanting, suitable trees could be developed for highway planting by nursery staking and pruning. It makes a tall spreading tree.

At a distance the compound leaves of the *Sophora* resemble those of the yellow Locust and it is a member of the same family. The large panicles of cream white flowers appear in August when there are few trees in bloom. The seed pods, like thick lima beans, are more or less opalescent and glisten in the sunshine,—another unusual feature. It appears free of insect pests.

A sixth possibility is the Varnish tree (*Koelreuteria paniculata*). This makes a low spreading tree, in time reaching shade-giving proportions, and has attractive compound leaves, but its crowning glory are the large panicles of golden yellow flowers that appear in early July.

Although not ordinarily planted for their flowers, the scarlet bloom and seed keys of the Red Maple (*Acer rubrum*), the yellow bloom of Norway Maple (*Acer platanoides*), the Tulip tree (*Lirioden-*

dron) and the fragrant bloom of Linden are not without merit.

And so this completes our selection of flowering trees which might also be planted for shade.

Now for a selection of smaller growing flowering trees suitable for central lawn areas of a highway, provided space is not too restricted for their development, or as "filler" for widely spaced taller growing shade trees.

A selection of flowering trees for street planting must necessarily exclude many that would be appropriate for lawn planting. Even in the list suggested as having possibilities for highway use, "standard" or tree form specimens with single leaders should be selected. Upright growing trees should have preference over those

suggested to get a mass effect. And if you want a companion plant, try the Allegheny Shadblow (*Amelanchier laevis*), also known as June berry. Of course, you should use the tree-form type. Its white flowers come early and if you can beat the birds to its fruit you will find it toothsome.

May—In this month our favorite native tree, the Dogwood (*Cornus Florida*), blooms. We cannot have too many of these but if you prefer the pink flowering form use it sparingly. The added merits of scarlet fruits and autumn colored leafage are well known.

The Asiatic Crab Apples (*Malus*) afford a wide selection in bloom from white, through pink to carmine. The size and color of fruits is variable and their attrac-

tiveness on a sunny autumn day is almost equal to their bloom. Crab Apples are preferred to Cherries, as the bloom of the latter is short lived, if the weather is warm or rainy. Crab Apples live longer and if they do not have fewer insect pests they at least seem more easily controlled.

If you're willing to take a chance with borer and possible scale infestation, try the Mountain Ash (*Sorbus*). The European species (*Aucuparia*) is more plentiful in the east and south, though in the north the native form (*Americana*) is more common.

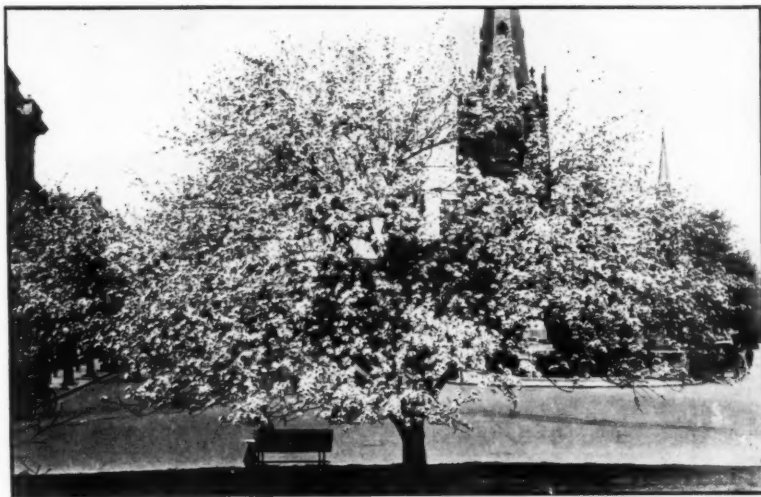
Both are attractive small trees with a slight difference in size and in the color of the bright orange-red berries. The creamy flowers may not be showy but they are fragrant and the compound leaves are attractive.

And if you're not afraid of the tent caterpillar, the European Bird Cherry (*Prunus padus*) will provide a bower of fragrance when it blooms.

The English Hawthorn (*Crataegus oxyacantha*) in white, or Paul's Scarlet form, must not be overlooked.

June—The Washington Hawthorn (*C. cordata*) is a favorite species with many. Aside from its flowers, its bright scarlet fruit, usually in abundance, remains well into the winter and even vies with the holly at Christmas time. It is of good upright growth, spreading with age.

July—Just one small tree to suggest for this month, but it is a member of the aristocratic Heath family—the Sourwood (*Oxydendrum arborum*). For its lily-of-the-valley like flowers in July, when tree flowers are scarce, it would be well worth planting. And it has a crimson autumn foliage, excelled by no other tree. In highway use today flowering trees should be fifty to 100 feet apart.



Crab Apple, decked in pink flowering beauty, at the street edge of a city park in the nation's capital

that spread, where width of space is restricted. For convenience in obtaining a succession of bloom the list is arranged in the monthly order of flowering.

April—This is the banner month of the year for blooming trees: The single-flowered Cherry, including the weeping type, comes first. The flowers appear before the foliage and give a splendid display, such as that for which Washington's tidal basin has become famous. The double flowered forms—of which there is a pyramidal type—bloom later, and are partially obscured by the leafage.

Of the Magnolias, the Yulan or Sweet scented white-flowering one blooms first of the tree-form kinds. I have excluded the earlier flowering Star Magnolia (*M. stellata*), because of its shrubby form, though it does contrast well with the early single-flowered Cherry.

The Saucer Magnolia (*M. soulangeana*) flowers just a few days later. Its pink flowers appeal to the public, though the fragrance of the Yulan has greater appeal and deserves to be better known.

The American Redbud (*Cercis canadensis*) has possibilities as a small flowering tree and rather close planting is

Conservation in Congress

(Continued from page 182)

board of twelve members to be appointed by the President;

(2) to classify all privately owned forest lands in each state of the Union and to designate those of a forest growing character that fall within the purview of the bill;

(3) to permit any state to submit a state plan of forest practices applicable to forest owners within the state and to enforce the practices specified after approval by the Secretary and with the financial and administrative aid of the federal government;

(4) to enforce directly the forestry practices approved by him in any state which after three years has not put into effect a state plan of forest regulation bearing the Secretary's approval;

(5) to withdraw federal aid funds and cooperation in the event a state fails to enforce any provision of its state plan and to take over and administer directly a state plan of forest practices and regulation for a period of ten years and longer, unless the state shall submit a new state plan satisfactory to the Secretary;

(6) to appoint administrators and advisory boards for each state, members of which shall be paid ten dollars a day for actual work days, plus travel expenses; these boards to formulate rules of forest practices within different areas of the state. The sufficiency of the rules is to be passed on by the Secretary, and he would have authority to amend them from time to time;

(7) to require forest owners to keep and preserve complete records of all forest operations and to give due notice of intention to cut any living tree, except for personal domestic use;

(8) to require certificates of clearance—if necessary to effect enforcement in any state or area thereof—for shipment of forest products from the state or region concerned; where such certificates are required, shipments contrary thereto would constitute a violation of the law.

The bill outlines a procedure for appealing the decisions of the Secretary and specifies acts prohibited by owners of forest lands. Penalties for violations would be fifty dollars a day for owners who fail to keep records of their operations or to give notice of in-

tent to cut timber, and not to exceed \$10,000 for wilful violation of any other provisions specified as prohibited.

Provisions of Mr. Pierce's bill H. R.

referred to the Committee on Agriculture.

Appropriation Bill

On March 6 the House cleared the Agricultural Appropriation bill providing funds for the operation of the Department during the next fiscal year. As passed by the House the bill reduces the budget for the Forest Service as reported in the February issue, by slightly over \$600,000, and in addition cuts back road and trail building funds for that Service by approximately a million dollars to \$9,000,000. The recommendation of the Bureau of the Budget of \$2,500,000—the full authorization of the Clarke-McNary Act—for cooperative forest fire prevention, was reduced \$150,000 to \$2,350,000; and the Bureau's recommendation of \$2,000,000 for national forest land acquisition was cut by \$500,000. On the other hand, funds for the protection and management of the national forests were increased \$18,500 over the amount recommended by the Budget Bureau and slight increases were given for private forestry cooperation and for the forest survey.

The Budget's recommendation of funds for the protection of forests against insects and diseases likewise suffered a cut, which fell upon activities to control the white pine blister rust. The Budget recommended \$1,409,000 for this activity, but this sum was reduced by the House to \$1,159,000—a reduction of \$250,000. Of this cut \$100,000 falls upon the portion of the item for the Department of the Interior.

No reductions, however, were made in the items for control of the Dutch elm disease and the gypsy and brown-tail moth. These items remain at \$300,000 and \$375,000 respectively.

The Department's Soil Conservation Service, however, fared well at the hands of the House. Its total appropriation as recommended by the Budget was increased by \$5,000,000 to the total figure of \$25,618,684. This increase was made to aid the Service in expanding its soil conservation districts.

The Agricultural bill is now before the Senate with final action predicted within
(Continuing on page 200)



"STRANGE HAVEN"

Because it likes to build its nest on a pole, rather than in a tree, the osprey or sea hawk used to be one of the most serious sources of annoyance to the Electric Company of Atlantic City, for it would constantly drag green twigs across the wires, causing short circuits. The company decided to erect special poles, with double cross arms so placed as to make nest building easier, and now everybody is happy. — for the osprey prefer them to the wire-laden poles!

This photograph, made by Joseph McAree, is published by the courtesy of the New York State Nature Association

3849 are substantially the same as those outlined above, except that the opportunity for states to do their own regulation of forest land owners within their boundaries is lacking. Both bills have been

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Rugged, husky power and long life go hand in hand in the new International ID-9 Diesel Tractor (above).

5 NEW INTERNATIONAL Industrial WHEEL Tractors

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Three of these new "I" models have carburetor-type engines—two have quick, easy-starting, full Diesel engines. They are stream-

lined, efficient, economical—ready to cut costs to the bone on a wide variety of jobs.

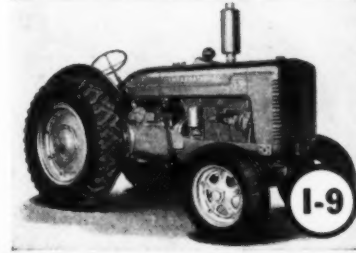
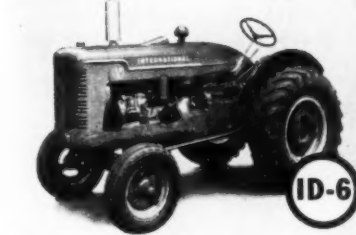
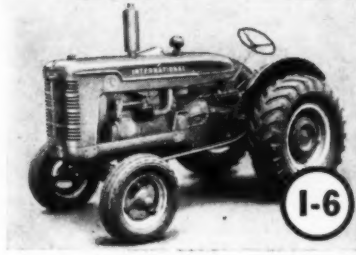
Contractors, counties and townships, cities and villages, airports, parks, cemeteries, golf courses, railroads, public utilities, factories, lumber and building supply yards, etc., will find these new Internationals useful and economical on a wide variety of construction, maintenance, materials-handling, and transportation work.

All of these tractors have Tocco-hardened crankshafts, pressure lubrication, replaceable cylinders, five forward speeds up to 15 m.p.h., gear drive, countershaft brakes that can be individually controlled or interlocked, provision for mounting a variety of allied equipment, and many other features.

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Lumber and Building Supply Industries will find the "I" tractors useful to speed handling of lumber in the yards, for pulling wagons, and for piling lumber with cranes and hoists.



"I" Tractor Facts

I-4—4-cylinder valve-in-head gasoline engine. Bore and stroke $3\frac{3}{8} \times 4\frac{1}{4}$ in. 5 forward speeds up to 15 m.p.h. Develops 29.5 engine h.p. at 1,650 r.p.m.

I-6—4-cylinder, valve-in-head gasoline engine. Bore and stroke $3\frac{7}{8} \times 5\frac{1}{4}$ in. 5 forward speeds up to 14 m.p.h. Develops 40.5 engine h.p. at 1,450 r.p.m.

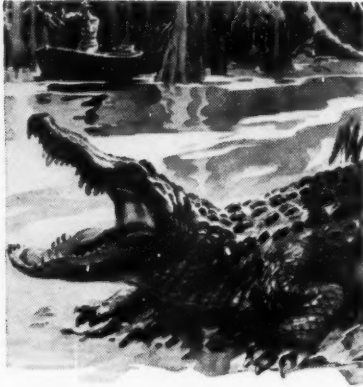
ID-6 DIESEL—Quick-starting, 4-cylinder, compression-ignition, 4-cycle Diesel engine. Bore and stroke $3\frac{7}{8} \times 5\frac{1}{4}$ in. 5 forward speeds up to 14 m.p.h. Develops 38.5 engine h.p. at 1,450 r.p.m.

I-9—4-cylinder, valve-in-head gasoline engine. Bore and stroke $4\frac{1}{2} \times 5\frac{1}{2}$ in. 5 forward speeds up to 15 m.p.h. Develops 54 engine h.p. at 1,500 r.p.m.

ID-9 DIESEL—Quick-starting, 4-cylinder, compression-ignition, 4-cycle Diesel engine. Bore and stroke $4\frac{1}{2} \times 5\frac{1}{2}$ in. 5 forward speeds up to 15 m.p.h. Develops 51.5 engine h.p. at 1,500 r.p.m.

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CONSERVATION CALENDAR

Important Bills in Congress, with Action
February 5 to March 17, 1941

BILLS ENACTED

H. R. 3204—TAYLOR—Making additional appropriations for the fiscal year 1941 urgently required for the Work Projects Administration and certain other federal agencies. Passed House February 12. Amended and passed by the Senate February 20. Signed by the President March 1. Public Law. No. 9.

APPROPRIATIONS

H. R. 2788—WOODRUM—Making appropriations for the Executive Office and sundry independent executive bureaus, boards, commissions, and offices for the fiscal year ending June 30, 1942. Passed House January 31. Passed Senate amended March 10. In conference March 17.

H. R. 3735—CANNON—Making appropriations for the Department of Agriculture for the fiscal year ending June 30, 1942. Amended and passed by the House March 6.

H. R. 3836—WOODRUM—First Deficiency Appropriation for the fiscal year ending June 30, 1941. Passed House March 7. Referred to the Senate Committee on Appropriations March 8.

CONSERVATION

H. R. 3793—HOOK—To safeguard and protect the public interest through the creation of conditions under which the remaining un-cut stands of timber of the hemlock hardwood types in the northern parts of the states of Michigan and Wisconsin can be conserved and utilized in orderly and constructive ways, etc. Introduced March 4. Referred to the Committee on Agriculture.

FISH AND WILDLIFE

H. R. 3361—BUCK—To provide that the United States shall aid the states in fish restoration and management projects, etc. Introduced February 17. Referred to the Committee on Ways and Means.

FORESTRY

S. 789—McNARY (H. R. 572—DOXEY)—To promote sustained-yield forest management in order thereby (a) to stabilize communities, forest industries, employment, and taxable forest wealth; (b) to assure a continuous and ample supply of forest products; and (c) to secure the benefits of forests in regulation of water supply and stream flow, prevention of soil erosion, amelioration of climate, and preservation of wildlife. Introduced February 6. Referred to the Committee on Agriculture and Forestry.

GOVERNMENTAL FUNCTIONS

H. J. Res. 15—FULMER—To investigate the apparent monopolistic purchasing of pulpwood by pulp and paper mills

under a contract-purchase system from farmers and other owners, price fixing of paper and other pulp products under trade practice rules and regulations including cost of distribution. Reported with an amendment (Report No. 145) by the House Committee on Agriculture February 24.

H. R. 3263—RICHARDS—To amend the CCC Act to provide "That enrollees (other than war veterans) shall be instructed in military tactics and drill for six hours during each week." Introduced February 11. Referred to the Committee on Labor.

H. R. 3458—PIERCE—To provide for a Forest Credit Commissioner and for a Forest Credit Bank, within the Farm Credit Administration, to extend credit for furthering the conservation and operation of forest lands. Introduced February 18. Referred to the Committee on Agriculture.

NATIONAL FORESTS

S. 780—WHEELER—To aid in the development of certain mineralized areas located within the exterior boundaries of the national forests, etc. Introduced February 6. Referred to the Committee on Agriculture and Forestry.

S. 1030—JOHNSON, Colorado—Pertaining to the management and administration of national-forest grazing lands. Introduced March 4. Referred to the Committee on Public Lands and Surveys.

PUBLIC DOMAIN

H. R. 3185—MOTT—For the relief of the State of Oregon, Department of Forestry of the State of Oregon, and certain organized protection agencies in the State of Oregon for protection of unappropriated public forest lands intermingled with Oregon and California lands from July 1, 1938 to June 30, 1939. Introduced February 8. Referred to the Committee on Claims.

TAXATION

H. R. 3101—WHELCHER—Providing for equalization of taxes to counties where there are government-owned lands. Introduced February 5. Referred to the Committee on the Public Lands.

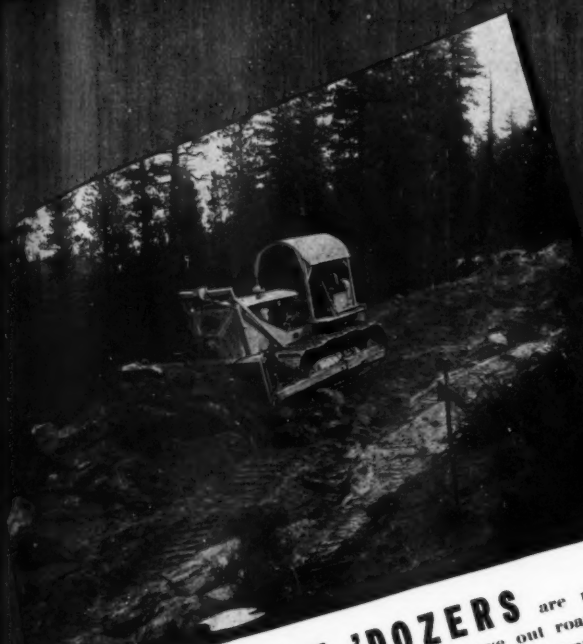
WATER AND STREAM CONTROL

H. R. 3778—MUNDT—To create a Division of Water Pollution Control in the United States Public Health Service, etc. Introduced March 4. Referred to the Committee on Rivers and Harbors.

MISCELLANEOUS

S. 811—WHEELER—To incorporate the Society of American Foresters. Introduced February 10. Referred to the Committee on the Judiciary.

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dig, haul and spread their loads all in one continuous operating cycle . . . extend the low cost of LeTourneau earthmoving over the longer hauls. Ejector-type dumping method spreads any material . . . sticky mud, rooted rock or ordinary dirt . . . eliminates need for special spreading tools. Slopes banks, digs wide-bottomed drainage ditches and spreads surfacing material for a low-cost finish.

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W. R. Mattoon, Pioneer Forester, Dies

Wilbur Reed Mattoon, widely known and early leader in farm forestry, died on March 4 at his home in Takoma Park, Maryland. He was sixty-five years old.

Senior forester with the United States Forest Service at the time of his death, Mr. Mattoon had been in poor health since November, 1939, when he suffered a heart attack while on a field trip in Mississippi. As one of the pioneers in forestry, he had been with the Forest Service since 1904, when he began work as a forest assistant in the Southwest, rising steadily in the Service through the positions of inspector, forest supervisor and examiner until he was chosen to develop the southern farm forestry program in



Wilbur R. Mattoon

1912 in cooperation with the Extension Service—with which he was employed for two years—in Washington and the various states. He surveyed and laid out the first reforestation experimental plots in the South at the Clemson Experiment Station, Summerville, South Carolina, twenty-nine years ago.

He was the author of a score of bulletins on forestry published by the Department of Agriculture, and many miscellaneous publications, posters and articles for scientific and popular forestry publications, lumbering, and farm periodicals. He was author of the forest tree manual for the District of Columbia, and co-author of manuals for seventeen states.

Son of a Methodist minister, Mr. Mattoon attended Cazenovia Seminary and graduated from Wesleyan University with the degree of Bachelor of Arts. Later he did graduate work in forestry at New York State College of Forestry, Cornell, and Yale Forest School, from which he received the degree of Master of Forestry.

An Opportunity to Pay Tribute to Fire Heroes



The American Forest Fire Medal Board was created in 1937 to recognize outstanding cases of personal heroism in fire fighting by the award of the Forest Fire Medal. The Board consists of a representative of each of the following organizations: The American Forestry Association, Society of American Foresters, Charles Lathrop Pack Forestry Foundation, Association of State Foresters, and the National Lumber Manufacturers' Association.

In order to establish this Award on a permanent basis, a fund or foundation of not less than \$3,000 is believed necessary. Cash balance on hand totals \$2,570.85. Your assistance in completing this fund is hereby solicited. It is believed that foresters, forestry, park, and all forest protection associations, as well as other conservation groups, will welcome the opportunity to contribute. Contributions of \$1.00 or more from individuals and larger amounts from organizations will be welcomed. Contributions should be sent to:

THE AMERICAN FORESTRY ASSOCIATION

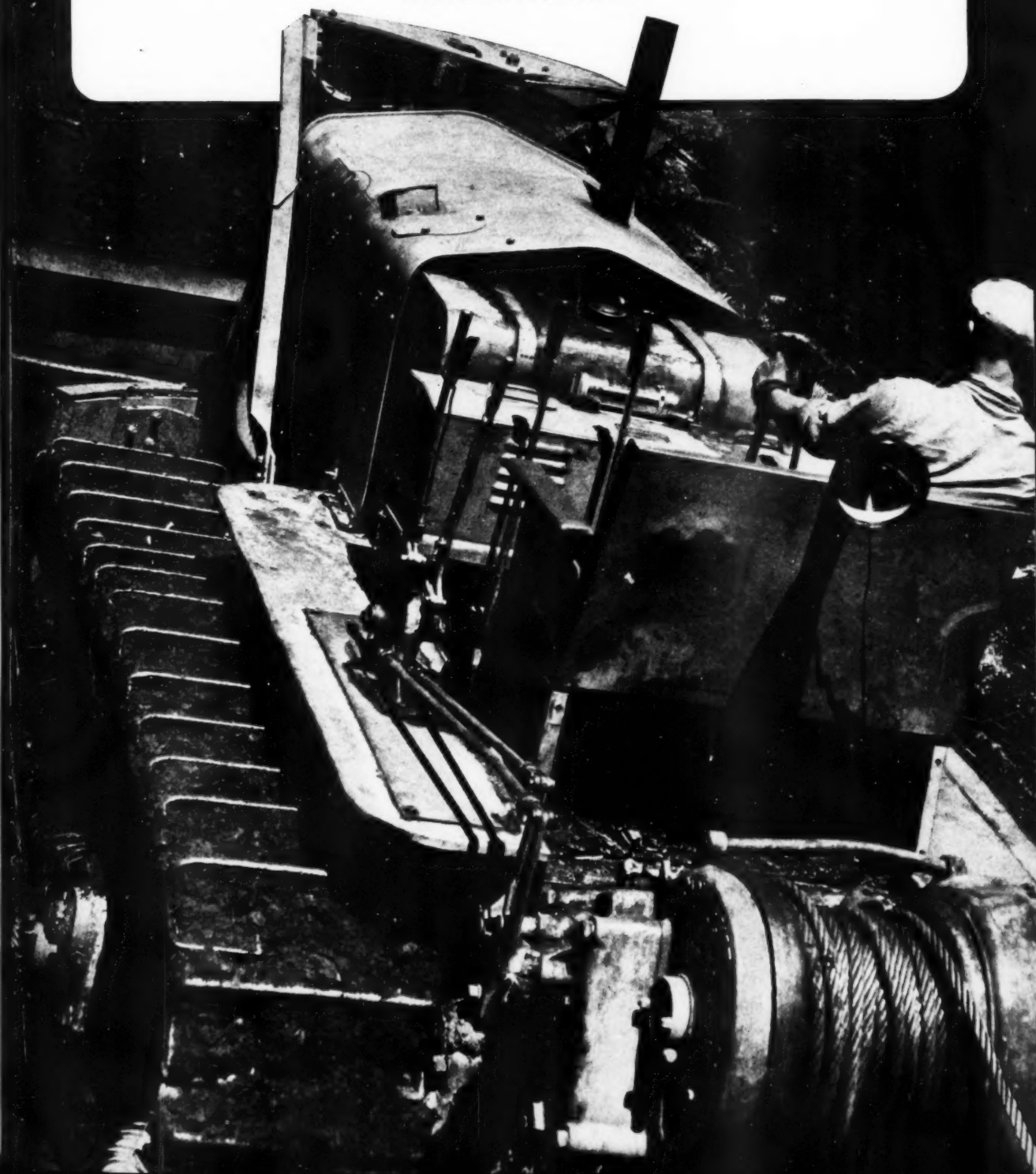
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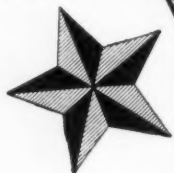




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FEDERAL NEWS

Sportsmen paid almost \$13,000,000 for more than 7,600,000 hunting licenses or combination hunting-fishing or hunting-trapping licenses in 1939, according to the United States Fish and Wildlife Service. The compilation included hunting licenses alone in twenty-one states and, in the others, the fishing and trapping licenses that were combined with those for hunting.

As was true in 1938, the big five for 1939 was headed by Michigan, with 711,733 licenses issued. Pennsylvania was second with 661,330; New York, third with 591,946; Ohio, fourth with 521,963; and Indiana, fifth with 358,386.

Federal migratory bird stamps, commonly known as duck stamps, also were issued to 100,000 more sportsmen in the 1939 season, a total of 1,111,561 stamps being sold to hunters of migratory waterfowl. The total paid for state licenses and federal duck stamps was more than \$14,100,000.

CCC Anniversary

April 15 has been set as the date for the eighth annual CCC anniversary banquet in Washington. Throughout the states celebrations are planned by the camps during the period between March 31 and April 17. The law setting up the CCC became effective on the former date. The first camp was established on the latter date.

Most of the camp programs will be in the nature of an open house, to which citizens of the communities surrounding the camps are invited to the camps to view the progress of the work being done and to inspect educational and recreational activities.

Record Shelterbelts Survival

An average of almost four out of every five trees planted in the shelterbelts of the Prairie States Forestry Project during the 1940 season have survived, according to the United States Forest Service.

The average survival by states was seventy-eight per cent in North Dakota, seventy-seven per cent in South Dakota, eighty per cent in Nebraska, eighty-two per cent in Kansas, seventy-seven per cent in Oklahoma, and seventy-six per cent in Texas. The six-state average was seventy-nine per cent in 1940 as compared to sixty-seven per cent in 1935, the first year of the project; fifty-one per cent in 1936, the worst drouth year; seventy-three per cent in 1937; sixty-one per cent in 1938; and sixty-six per cent in 1939.

Reasons for the improved survival in 1940 were more favorable moisture conditions, survival of a large number of conifers, especially cedars, and improved cultivation.

Several thousand miles of WPA shelterbelt projects, administered by the Forest Service, have been planted each year since 1935. At the present time nearly 14,000 miles of shelterbelts are growing on more than 22,000 farms.

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- Adequate Forest Fire Protection by federal, state and other agencies.
- Reforestation of Denuded Lands valuable for timber, wildlife, protection of streams.
- Protection of Fish and Game and other wildlife under sound game laws.
- Prevention of Soil Erosion
- Preservation of Wilderness for Recreation
- Establishment of State and National Forests and Parks
- Development of Forestry Practices by the forest industries.
- Education of the Public, especially children, in respect to conservation of America's natural resources.
- Forest Recreation as a growing need for the development of the nation.

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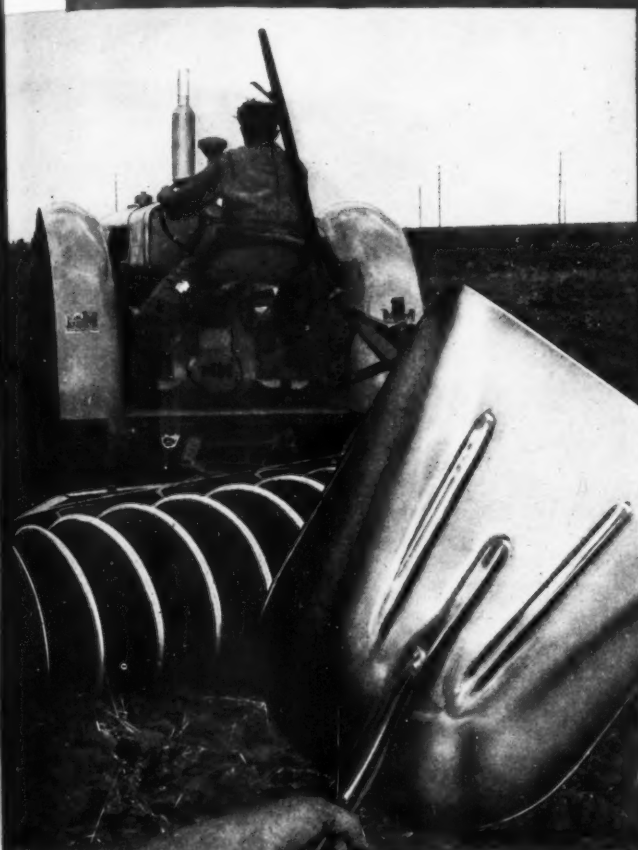
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Your companions will be authors, artists, nature lovers, noted men and women, cowboy and Indian guides. Ride begins at Banff, July 25, finishing July 29. Rate of \$50 for the 5 days includes tent equipment, meals, saddle ponies and guide service. For information and 1941 Trail Ride bulletin write Secretary-Treasurer, Room 318, Windsor Station, Montreal, Canada, or any Canadian Pacific Agent.

Early Reservations Are Advisable

Canada Welcomes U. S. Citizens—No Passports

AROUND THE STATES

The 19th annual convention of the Izaak Walton League of America will be held in Washington, D. C., March 27, 28 and 29. Among the speakers scheduled to address the convention are Secretary of Agriculture Claude R. Wickard; Secretary of the Interior Harold L. Ickes; Dr. Ira N. Gabrielson, director of the federal Fish and Wildlife Service; Edward J. Meeman, of the Outdoor Writers' Association; Seth Gordon, director of the Pennsylvania Game Commission; Frank E. Mullen, vice-president of the National Broadcasting Company and a director of The American Forestry Association; J. N. "Ding" Darling, noted cartoonist and conservationist; and Representative Karl E. Mundt, of South Dakota. Headquarters will be the Willard Hotel.

Oregon Considers Forest Conservation

"The preservation of forests and the conservation of forest resources . . . and the continuous growth of timber on lands suitable therefor" would be the public policy for the State of Oregon if affirmative action is given Senate Bill No. 93, now before the Oregon State Senate. When passed this will be known as the "Oregon Forest Conservation Act."

Giving individual attention to the Ponderosa pine forests east of the summit of the Cascade Mountains, and those predominantly Douglas fir on the west side, the bill would require every operator within the state to "leave reserve trees of commercial species . . . to maintain continuous forest growth . . . or provide satisfactory restocking to insure future forest growth." This must be accompanied by reasonable efforts to protect residual stands or trees which are left as a source of seed.

On the east side of the Cascades all immature ponderosa pine trees less than sixteen inches in diameter must be left, or not less than 320 seed trees of at least twelve inches in diameter on each quarter section of 160 acres. An essential feature of this section is that "no forest land not already restocking shall be farther than one-fourth mile from

an available natural source of seed."

The fir forests on the west side shall be so handled as to leave at least five per cent of each quarter section of 160 acres uncut and well stocked with trees of seed-bearing size. This may be accomplished by leaving (a) marginal long corners of timber between logged areas, or (b) strips of timber along creeks, across valleys, along ridges or natural fire-breaks, or (c) staggered settings and the leaving of uncut settings for a sufficient period to reseed cut-over areas. As an alternate to this it is proposed that there be left "seed trees at least eighteen inches in diameter breast high, in the ratio of two trees per acre, well distributed over the area cut."

The State Forester would administer the act, and have full authority to require the operator to comply with the regulation. The actions of the State Forester may be appealed to the State Board of Forestry, and thence to the Circuit Court of the county in which the land is located.

Wildlife Restoration Week

Once again approaches that time of the year when the attention of the American people will be intensely focussed on the preservation and restoration of the nation's natural resources, particularly wildlife resources. The event is the Fourth Wildlife Restoration Week, sponsored by the National Wildlife Federation, and will be observed the week of April 14 to 19.

According to a Federation spokesman, "America is a land still comparatively rich in natural resources, but we have been reckless with this heritage in the past. Square miles of land have been ruined and millions of trees ruthlessly destroyed by ax and fire. Erosion has eaten ugly sores in the broad bosom of our fair land.

"The National Wildlife Federation, through the sponsoring of the Fourth Wildlife Restoration Week, seeks to halt such depredations."



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TIMBER IS A CROP

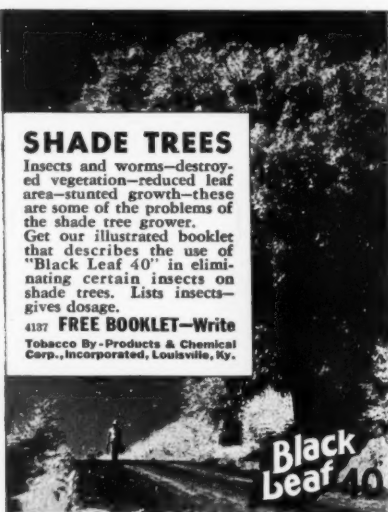
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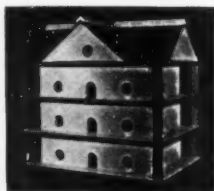
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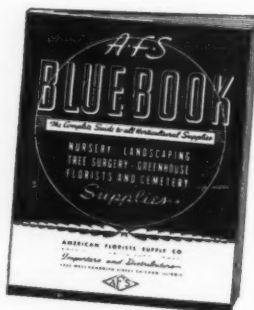
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A-W MOTOR GRADER

A new motor grader, with hydraulic controls, for jobs that pay out better with a lower investment, without sacrificing the quality of work, has just been announced by The Austin-Western Road Machinery Company. It is powered with a 31 H. P. gas motor; weighs approximately 8,000 pounds, and uses a sturdy, mono-rail, box-type frame that averages 50 pounds to the foot. It has five speeds forward ranging up to 14.8 M.P.H. and a reverse speed. It is called the No. 55.

Scarifier and blade lift are operated by a form of hydraulic control such as is used on machines selling at much higher figures. Side shift and circle reverse are hand operated from the cab; steering is very direct and highly efficient.

Other design features of interest include a wide front axle with ample ground clearance to straddle windrows; front wheels spaced to track with rear drivers; draft beams with ball-joint connection; large diameter circle and heavily braced blade supports. Standard equipment includes an 8-foot blade, hydraulic wheel brakes and parking brake.

BACK-PACK PUMPS

D. B. Smith and Company, makers of the INDIAN fire pump, again this year offer a number of improvements in this important fire fighting accessory. These five gallon tanks use only clear water and may be carried in the hand or be thrown on the back like a pack-basket. They are made with a zinc-coated steel, rust proof tank or a solid brass tank and all models have a solid brass pump which will throw a clear 30 to 50 foot fire stream with easy, slow pumping. Since they use water there is no recharge cost and they can be quickly filled at any time.

These pumps are widely used by the United States Forest Service, the National Park Service, state foresters and by the Civilian Conservation Corps. They are unsurpassed for grass, forest, tent and building fires. A special feature of

the INDIAN Pump is a groove in the tank shaped to fit the back in order to obviate any rubbing or chafing of the carrier.

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Filling the need for a high-speed, rubber-tired earthmoving machine, with the efficiency, construction and proven design of the Standard C Tournapull, but with a more powerful engine, two new Super C Tournapulls, designed to meet the construction needs of larger, long haul earthmoving jobs, have been introduced.

Powered by either a 130 or 150 horse power 6-cylinder Diesel engine, the Super C utilizes this extra power to increase the production per hour by pulling a Model LP Carryall with a struck capacity of 12.1 and a heaped of 15 cubic yards.

Inasmuch as the LP holds four more heaped yards of material than the Model LS used with the smaller C Tournapull, production can be increased as much as a third, further increasing earthmoving efficiency and cutting costs.

Tournapull loads are expelled by positive, mechanical, ejection. The four sides of the bottomless bowl slide back off the stationary bed, forcing the load to travel with it, leaving an ever-widening opening, until the bowl reaches extreme rear position, where the opening is the full size of the dimensions of the bowl. The Tournapull is used extensively with shovels and draglines, because of its interchangeability and large bowl, making spotting a simple matter.

RATTLE-BUSH BEANS TO REPELL RODENTS

The rattle-bush is a leguminous shrub which grows in waste places from Florida to Arkansas and Texas. This bush, *Dawsonia drummondii* Rydt., is planted for ornament because of its handsome flowers, but no other economic use is known for it. However, tests of the beans of this bush, made at the request of the hillculture division of the Soil Conservation Service, indicate that they may have value for repelling rodents. The bush bears heavy crops of beans and these seeds are known to be very poisonous to sheep and goats.

Rats were fed on standard rations containing meal made from finely ground rattle-bush beans, the proportion of meal in the ration varying from 25 per cent down to 0.5 per cent. The animals preferred to die of starvation rather than to eat the test diet, even when the ration contained as little as one-half of one per cent of the rattle-bush meal. The cause for this highly repellent effect on rats is not known but is a matter which rodent-control investigators may wish to determine. It is possible that the rattle-bush bean-meal or its extractives may furnish an effective material for treating nuts and other seeds in field plantings made for erosion control and forestry purposes.

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The Use of Water While Backfiring

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Types of Portable Pumps

The Factors Governing Effective Fire Streams

The Mechanics of Portable Pumps

If you own property away from municipal protection you should have a copy of this new book. Written especially for the U. S. Forest Service and state forestry departments, it is especially interesting to lumber and timber companies and private estate owners as well as resorts, small municipalities, farms, etc. For 13 years, Gordon A. Rice has been on the fire line, fighting all kinds of fires, and studying methods. He is responsible for more

improvements in fire fighting methods than any one man outside of government service. Without going into technical language or becoming involved in detail, he clearly and concisely outlines the accepted method of fighting fire, taking you through the various stages of checking, controlling and actually suppressing a fire. If you are interested in cutting down or minimizing fire losses on your property, do not fail to send for your copy of this book.

"A Most Practical Book About the Most Practical Fire Fighting Method"

Every experienced fire fighting man who has read this book proclaims it the most outstanding fire fighting manual ever printed. Nearly all of the first issue of this book has been sent to the various divisions of the U. S. Forest Service. Only a few copies remain for general distribution. An early response will insure your receiving a copy.

This book tells you how to attack a fire under various conditions, the number of men necessary to operate this method efficiently, and what each man's job should be.

The book is profusely illustrated and its 72 pages are crammed full of vital facts and a number of important tables which cannot be found in any other book.

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BIRDS OF THE GREY WIND, by Edward Allsworthy Armstrong. Published by Oxford University Press, New York City. 228 pages, illus. Price \$3.50.

Here are the birds of Ireland, in their own home habitat, pictured as only a native of that "strange and beautiful land" could show them to us. An ornithologist, "born within sight of the sea and mountains"—the author writes with an inspired pen—not only with deep wisdom of the birds and their ways for the serious student of bird life, but he interprets as well their inseparability with the legend and folk-lore of that enchanted land in a way to delight the lover of birds—and Ireland. It is a precious book—with its unusual, original photographs made by the author

and his contemporaries.

RURAL AMERICA LIGHTS UP, by Harry Slattery. 142 pages. Published by the National Home Library Foundation, Washington, D. C. Price 25 cents.

This is the story, briefly told, of rural electrification, and, by the man best qualified to speak—for he has lived with the dream of bringing low-cost electricity to rural America for many years. As Administrator of this splendid arm of the Government's service to the people, he addresses this little book "To the men and women on the farms of America—to the men and women of REA, in Washington and in the field—and on the projects—to all who have made a dream a reality."

THE FLORA OF WHATCOM COUNTY, WASHINGTON, by W. C. Muenscher. Published by the author at Ithaca, N. Y. 134 pages. Illus. Price \$1.25.

After many years of exploration of Whatcom County during which time the author collected thousands of specimens of the varied flora of the county, he presents this book as the result of his study. Illustrated with ten photographs showing typical habitats in the several life zones of the county, the first pages offer a discussion of these zones. There is a brief chapter giving suggestions for the ornamental planting of native species, while the last of the book comprises an annotated catalog of the vascular plants of Whatcom County, recording more than a thousand species.

THE TETONS, INTERPRETATIONS OF A MOUNTAIN LANDSCAPE, by Fritiof Fryxell. Published by The University of California Press, Berkeley. 77 pages. Illustrated. Price \$1.50.

Opening the story with a word-picture of the Teton country, the author continues with several chapters of geological explanation which he colors by his esthetic appreciation of the final result effected through the ages upon those rocky peaks. In the closing chapter he vividly describes the ever changing appearance of the mountains brought about by weather, season and sunlight.

This book has the rare quality of combining the artist's interpretation with the scientist's understanding.

THE CARPATHIANS, prepared by John D. Guthrie, James A. White, Henry B. Steer and Harry T. Whitlock. 48 pages. Copies may be secured for 50 cents each, postpaid, by writing John D. Guthrie, Army and Navy Club, Washington, D. C.

Named "The Carpathians" from the British ship which carried the boys across in September, 1917, this is a roster and history of the famous 10th Engineers, in the organization and recruiting of which the Forest Service and The American Forestry Association had such a large part. The booklet is the result of fine work for many years on the part of a special publication committee of ex-members of the 10th. "The Carpathians" is also the informal name of a group of former members of the 10th, who meet in Washington each year for dinner on Armistice Day.

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We ourselves believe our natural resources of soil, water, forests and wildlife are basic to the welfare of the Nation, and that their protection and wise use must be assured. To this end we are striving to do our part to protect the forest resources of the Nation.

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Conservation in Congress

(Continued from page 186)

the next few weeks.

WPA Funds

On February 27 Congress completed and passed the Urgent Deficiency Appropriation bill (H. R. 3204), to provide additional WPA funds for the remainder of the current fiscal year. Of these funds \$44,000,000 are tagged for allocation to federal agencies for carrying forward work projects now under way. Included in these projects is control of the white pine blister rust, the Dutch elm disease, and the gypsy and brown-tail moth. The total allocation represents an increase of \$4,000,000 over the amount recommended by the Budget Bureau.

The Independent Offices Appropriation bill, which includes an item for operation of the National Resources Planning Board, has passed both houses and is awaiting conference action as this issue goes to press. In the Senate, the item of \$350,000 approved by the House for national defense activities of the Board was increased by \$150,000.

A bill of interest to the Lake States, particularly Michigan and Wisconsin, H. R. 3793, was introduced on March 4 by Mr. Hook. It is being sponsored by the "Save the Porcupine Mountains Association" of Michigan—an organization recently formed to provide public protection and management for a large tract of virgin hardwood forest in northern Michigan. This is the largest area of virgin hardwoods left in the United States.

Porcupine Wilderness

Mr. Hook's bill would make it possible for the Department of Agriculture with the approval of the National Forest Reservation Commission to acquire this and other tracts of hardwood lands in the northerly parts of Michigan and Wisconsin and add them to the national forest system. It would further authorize the Secretary of Agriculture to transfer parts of these lands, after federal acquisition, to the state to form state forests, when in his judgment they could be most economically administered in conjunction with existing state forests. The bill provides that federal funds for the purchase of such lands would be derived from a loan of \$30,000,000 from the Reconstruction Finance Corporation.

New Pollution Bill

Another chapter in efforts in the direction of federal control of stream pollution in the United States was written on March 4 when Representative Mundt, of South Dakota, introduced in the House a new

bill, H. R. 3778, bearing upon the subject. The bill is a revision of one which Mr. Mundt introduced in the last session and which along with several other pollution control bills failed of passage. The present bill would establish a Division of Water Pollution Control in the United States Public Health Service, headed by a commissioned engineer of that Service. The Division would be empowered to cooperate with other federal agencies and with states in preparing plans to improve and control the pollution of navigable waters, to cooperate with the states in preventing water pollution, and in encouraging uniform laws and state compacts. Authority is given the Division to divide the United States into districts to be known as Sanitary Water Districts and to fix standards of purity for the waters in such districts. It is further empowered to formulate regulations governing the discharge of polluting matter or material into such waters. Compliance with these standards would be required within two years from passage of the act, but extensions of not exceeding five years to permit industry to develop adequate disposal methods may be granted. For each Sanitary Water District, the bill would provide a district board whose duty it would be to prevent pollution within the waters of its district and to investigate possibilities of loans or grants for the construction of needed sewage disposal plants.

The bill further provides for the establishment within the Division of Water Pollution Control of a board of five members, three of whom shall be commissioned engineer officers of the Public Health Service, the fourth the chief of army engineers, and the fifth the chief of the U. S. Fish and Wildlife Service. This board would pass upon applications for loans and perform such other duties as might be specified by the surgeon general. The bill would make the pollution of waters of the United States an act against public policy and a public and common nuisance. It would authorize duly constituted state or interstate agencies to enforce the provisions of the act and where they do not exist or fail to act, the federal government would have authority to step in. An appropriation authorization of \$250,000 is provided for carrying out the first year's administration of the act, the provisions of which, it is specifically stated, would not apply to industrial pollution during the present emergency in cases where the Secretaries of War or Navy certify them to be incompatible with progress of the national defense program.

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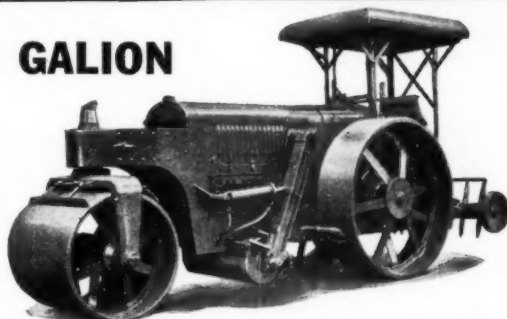
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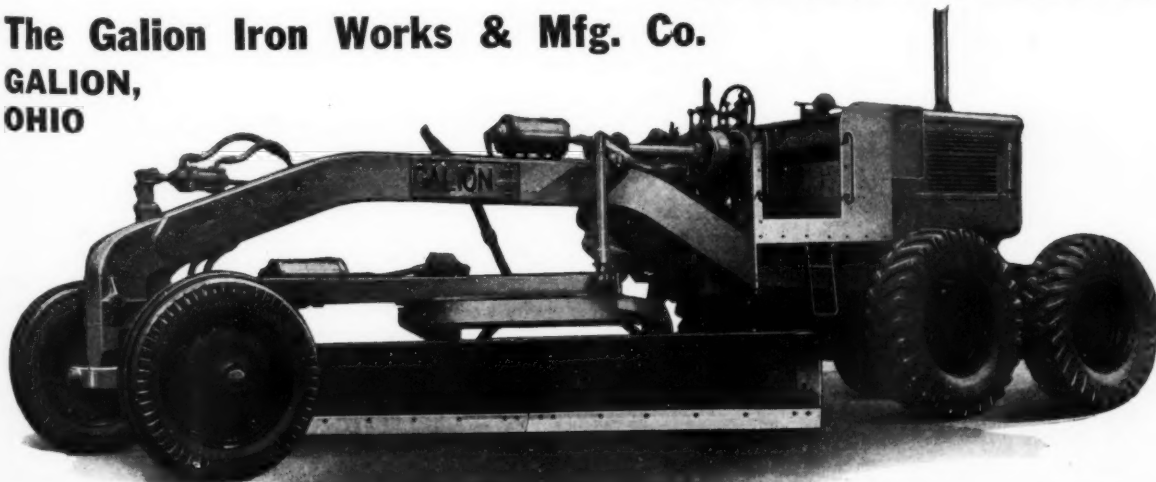
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Memorial Forest to Robert Fechner

A forest memorial to Robert E. Fechner, first director of the Civilian Conservation Corps, will be established on the wooded slopes of Massanutten Mountain in Virginia, the federal Forest Service has announced. The area selected comprises 72,000 acres of federally owned land and is a major unit of George Washington National Forest, located within a hundred miles of the Nation's Capital. Within it the first Civilian Conservation Corps camp, Camp Roosevelt, was established on April 13, 1933. This camp is still in operation at the original site.

In an executive order dated February 5, President Roosevelt designated the Massanutten unit as the "Robert Fechner Memorial Forest," and directed that lands acquired, or subsequently to be acquired, in this unit of George Washington National Forest shall be administered, developed, and managed as national forest land, but shall "reflect the spirit and intent of their memorial designation."

The lands will continue to have a national forest status, the order provides, and local administration will remain in the headquarters of the George Washington Forest at Harrisonburg, Virginia. Camp Roosevelt will remain at its original location, and will continue the work on which it has been engaged.

According to R. M. Evans, regional forester, the memorial forest not only marks the birthplace of the active program of the Civilian Conservation Corps, but that the enrollees who have constituted the personnel of Camp 1 have been engaged on a variety of conservation projects that are probably as nearly typical of the Corps' nation-wide program as could be found in any one locality. Among these he mentioned fire control improvements, road construction, tree planting, eradication of white pine blister rust disease, silvicultural work to improve the value and volume of forest growth, development of better wildlife conditions, and work on recreational areas.

"Dedication of national forest lands

as memorials is not new," said Mr. Evans, "but it is difficult to conceive a more appropriate one than this. I believe Robert Fechner was very proud of the work done here, and I know that we have been pleased with the help that Camp Roosevelt has given and is still giving in developing the Massanutten unit of George Washington Forest for watershed protection, sustained timber production, wildlife management, and recreational use. In handling it, there will always be for those of us who knew Director Fechner, a special satisfaction in the belief that he would be pleased with this type of memorial dedicated to the development and protection of natural resources."

The Robert Fechner Memorial Forest will comprise the whole of that portion of George Washington National Forest lying along the crests and slopes of Massanutten Mountain, extending a distance of approximately forty miles from near Front Royal to Montevideo, between the Blue Ridge Mountains and the Shenandoah Valley in northwestern Virginia. The gross acreage of the area is about 149,000 acres, of which approximately 72,000 acres have been acquired by the government. Additional purchase of lands on the steeper slopes and submarginal farm lands is expected, but there is much arable land, which will continue in private ownership.

The new memorial forest, crossed by U. S. Route 211 and State Route 55, is readily accessible, and has long been popular for its scenic views, its historic associations, and the recreational opportunities it affords. One of the most popular recreation areas is the Elizabeth Furnace camping and picnicking area, which has been used by the public for more than a quarter of a century. Woodstock Tower, from which may be seen the seven ox-bow bends of the Shenandoah and uninterrupted vistas of Shenandoah Valley, is visited by thousands.

Of special historic interest is the fact that Stonewall Jackson used the passes of the Massanutten, which he knew intimately, in maneuvering around the Northern forces, and the tradition is that Washington once had Fort Valley surveyed as an impregnable retreat in the event of defeat of American forces at Yorktown. Signal Knob, at the north end, was used by the Confederates as a signal station.

NEW FIRE STAMPS

For the third consecutive year, The American Forestry Association will offer brilliantly colored poster stamps—to be used in building public sentiment against the forest fire menace. The new stamp has been designed and painted by Devereux Butcher, artist of the Association, formerly of the Pennsylvania Academy of Fine Arts, Philadelphia.

Beautifully reproduced in four colors, the stamp carries the slogan—"Defend America—Industry Must Have Resources—Prevent Forest Fires." These stamps, serving as arresting reminders to be careful with fire while in the woods, will be available the first week in April at \$1.00 a sheet (100 stamps to a sheet). They are ideal for use on letters and packages of all kinds.



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Amber—Gold from Ancient Trees

(Continued from page 165)

by decayed matter and moss, would likewise be caught by the fire; it could not flare up, however, but would slowly smoulder below the protecting cover and form a dusky rind.

"Furthermore, the amber-forest was alive with a very abundant fauna, since insects and spiders, snails, birds and mammals of many kinds had their haunts in it, just as in forests of the present time. Intimate mutual relations existed then as now between the lives of the trees and those of most of the animals, many of the latter being harmful to the living trees, while others attacked the dead wood. Big animals would wantonly or accidentally break off limbs and injure roots above the ground by treading on them.

"All of these occurrences in the amber-forest of long ago caused injuries to the trees which would, consequently, after the fashion of resinous trees of today, seek to heal the break with a resinous substance exuded from the wound. This resin, continually flowing from thousands of trees, would reach the earth at the base of the tree and gradually harden into the product now known as amber."

As the ages passed, the entire region occupied by the amber-forest was submerged during some cataclysmic upheaval of nature, and rested, finally, at the bottom of a sea for no one knows how many epochs. Then, as the water receded, there was built up on top of the amber deposits of the soil which today covers the beds of amber.

Neither the thousands of years which have come and gone since the submersion of these forests of amber-pines and the subsequent recession of the water nor the restless movement of the sea has been able to bring about any change in the position of the amber deposits.

In the days past—up until about the turn of the century, in fact—amber was obtained through what was known as the "amber fishery." The natives along the shore in the Samland were the principal workers, and each day after a storm, the beach would be alive with "fishermen." These people—men, women, and children—carried long, stout poles, to the ends of which were fastened large, round nets, something like the crab nets so familiar to dwellers along our own seacoasts. With these nets the fishermen would wade out into the water and dip up the buoyant amber lumps as they were seen riding shoreward on the crests of the waves.

As the industry grew in importance and value, however, the amber fishermen were prohibited from gathering the product along their shores and were forced to turn away accidentally found over to the "authorities," who paid them small sums for it. Laws were passed by the holders of the monopoly on amber, and it was made a hanging offense to "smuggle" the precious stuff. Gallows were set up along the beaches in the vicinity and more than one poor fisherman who sought to make a

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profit on his labors was strung up as an example to his fellows.

But about the dawn of the twentieth century, the demand for amber had grown to such proportions that it was impossible to supply it from the amber thrown up along the shore. Consequently, due to the fact that occasional small pockets of amber had been found below the sandy bluffs along the beach, experimental borings were begun by geologists to determine whether or not amber could be found in paying quantities on the solid ground adjacent to the beach.

Success attended these efforts, with the result that the chief supplies of amber today are obtained from mines in close proximity to the beach where the amber is cast up by the sea. Palmnickien is the center of the amber mining industry, and around this Prussian city are numerous workings. The amber is found at a depth of from one to two hundred feet, being encountered in a stratum of dark, bluish-green, clayey sand, the so-called "blue-earth" of the ancient forest floor. Most of the product is secured in open-pit mines, with hydraulic methods, but some is mined in shafts. Approximately 250 grades are obtained.

The larger pieces are usually made into small sculptured pieces of great beauty, and even as far back as the 13th century there were amber turners' guilds in all the larger towns of the Baltic, with Danzig as the center. It was not, however, until the 17th century that the art of amber carving attained its highest stand-

ard of excellence. At that period the beauty of amber was displayed in reliefs, mirror frames and house-altars. One of the most gigantic works of that time was the amber hall of the castle used as the summer residence of the former Russian czars. The people of Africa and India also buy tremendous quantities of amber, in large irregularly shaped pieces, sometimes investing the greater parts of their fortunes in this manner. These pieces are used as charms against many of the vicissitudes of life.

The amber pieces in which fly, beetle or spider remains are found enjoy a ready sale even among civilized peoples, as the mystery of the ages seems to be represented by these specimens. In truth, the insects, leaves and flowers found in their amber prisons form the basis for the major portion of present day knowledge of the life that existed in that forgotten age.

The extent of the amber-bearing deposits along the Baltic are known to be of limited extent, although a considerable supply still remains. Other sources are Burma, Rumania, Sicily, Mexico and Santa Domingo. But once these sources are exhausted, the semi-precious substance called amber today will be forever lost to man. It may be possible that resin produced by some trees of the present could be metamorphosed into a product similar to amber through the ages to come, but the amber of today comes down to us as one of the most precious products of a forest that flourished millions of years ago.

Solved—The Mystery of Ross's Goose

(Continued from page 159)

Hudson's Bay Company. Hearne encountered the species in large numbers while journeying to Coppermine in 1770 or 1771, and he described it as follows:

"This delicate and diminutive species of the goose is not much larger than the Mallard duck. Its plumage is delicately white, except quill feathers which are black. The bill is not more than an inch long and at the base is studded round with little knobs about the size of peas, but more remarkably so in males. Both bill and feet are of the same color with those of the Snow Goose. This species is very scarce at Churchill River; and I believe is never found at any of the southern settlements, but about two or three hundred miles to the northwest of Churchill, I have seen them in as large flocks as the common Wavy, or Snow Goose.

"The flesh of this bird is exceedingly delicate, but they are so small that when I was on my journey to the North I ate two of them one night for supper. I do not find this bird described by my worthy friend Mr. Pennant in his 'Arctic Zoology.' Probably a specimen of it was not sent home, for the person that commanded at Prince of Wales Fort at the time the collection was making, did not pay any attention to it."

In 1861, Chief Factor Bernard R. Ross,

in whose honor the bird was named, sent specimens to the Smithsonian Institution from Fort Resolution, Great Slave Lake. Roderick MacFarlane was also a keen naturalist, who collected a specimen four years after it was named and made extensive efforts himself to locate its breeding grounds. In fact, he induced most of the Company's officers in the Mackenzie district to engage in the search. Throughout the territory, Eskimos and Indians were questioned, but no clue to the whereabouts of the nesting area was learned. All recent Arctic expeditions have been on the lookout for the nests of the Ross's Goose, and it is surprising that Hearne's old notes did not direct the explorers more closely to the actual breeding grounds.

It has been known of course that the Ross's Goose spends its winters in the Sacramento and San Joaquin Valleys in California, migrating over the mountains and through western Montana, north to Lake Athabaska and Great Slave Lake. Here they pause almost a month to rest and feed before disappearing in a northeasterly direction to their hitherto unknown breeding territory. In September they returned from the same direction.

In a grassy bay on the mainland four pairs of Blue Geese were found nesting,

and birds were photographed for record, thus revealing another major find—the first mainland breeding location of the Blue Goose. Nests of this species had been found a decade ago on Baffin and Southampton Islands.

The Ross's geese were found on small rocky islands of low elevation, several hundred such reefs being found on the lake. Although Ross's geese seemed to have a monopoly on them so far as geese were concerned, Eskimos said that the chief nesting grounds were on a similarly island-dotted lake of larger size, six miles eastward. All along the Perry River, explorers found abundant bird life. Thou-

sands of pintail ducks were seen, chiefly in a small marsh near the river's mouth. Ducks of other species were noted, but not in such large numbers as the pintail. Along the tributary of the Perry, Canada geese, whistling swans, sandhill cranes and large and small shore birds were seen. The men said that the air was musical with the songs of small birds and on the islands off the coast Old Squaw ducks, Eider ducks, Brant, Arctic tern and gulls of several species were common. In fact, a vast breeding ground for waterfowl is believed to exist in this unmapped area, and further explorations may lead to astounding discoveries.

Nurse Crops—A Neglected Ally

(Continued from page 162)

as rapidly as possible with something approaching the normal deposit of such material.

In many of our regions it would not be profitable to harvest the nurse crop for market. But in such cases the application at the proper time of a few man-hours of weeding an acre will often justify itself in increased yield and greatly improved quality of the final crop. This has been clearly shown in the work on the Harvard Forest.

Nurse crops need not be closely spaced. If machinery be used for planting, such as a tractor-plow, and strip planting applied, enough room can be left between the strips so that later when the main crop should be planted a tractor can pass between the rows.

Another and probably better procedure, especially when the nurse crop can be used for pulpwood, is to plant with the usual spacing, say six by six feet or six by eight feet. When the nurse crop has reached post or pulpwood size, forty to sixty per cent of the stems should be cut and removal should include the largest and most wolfish individuals which would yield the most wood and are undesirable as nurse trees. The main crop should then be planted under the shelter of the remaining four or six hundred trees. These would all be removed in one or two cuttings eight to fifteen years later when they are perhaps thirty or forty years old. This is sound nurse crop economics because most pioneer species grow very fast in youth, then slow up appreciably and deteriorate at middle age. This is, for instance, the case with jack pine and aspen.

As already mentioned, nurse crops are of little value to trees which in themselves have pioneer qualities because they would be hampered by an overstory and would derive little advantage from a protected environment. We are today using chiefly species which have some pioneer qualities for reforesting open areas simply because they are the only ones which we can make survive and grow. In our reforestation programs in all parts of the country, we are using pines primarily. In fact, we live in the pine age of reforestation. But there are differences in the requirements of pines. Jack pine is a pronounced pio-

neer tree, red pine does very well in the open on red pine sites, but white pine can apparently take advantage of protection even when planted on pronounced white pine sites. A temporary nurse crop which financially can take care of itself and which furthermore can nurse the crop species along should therefore be good silviculture. It is better to invest two dollars and get three dollars back than to invest one dollar and get only fifty cents back.

The sum and substance of our thought is that we should be heedful of the established and recognized gradual march of plants from the pioneers up to the more advanced and valuable associations, rather than rush headlong into a too sudden planting operation. We should seek first to accelerate somewhat the development of the natural successional associations, delaying our commercial planting until the site has received at least some necessary advance treatment and preparation by either natural or artificial means.

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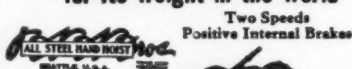
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Rediscovering the Trail of the Pioneers

(Continued from page 176)

Steep Hollow. Finally, across the foothills and into the broad valley of the Sacramento. This was the trail of the pioneers.

One of those wagons in 1849 carried a young muleskinner, John Markle, who kept a diary and record of his experiences in crossing the plains and mountains. Markle's journal has proved a valuable aid to historians and foresters who have been active in marking the route of the old trail. During the wagon days between the present Donner Lake and the foot of Steep Hollow, his diary reads:

"Monday, August 20, 1849—Today we traveled about ten miles and encamped in a valley at the base of the mountain about three-quarters of a mile east of Truckee Lake (Donner Lake). The first two miles brought us to the valley where Donner encamped. One mile more brought us opposite to where his cabins were . . . about one or two miles from the road on the right hand side. There were a number of fragments left, but more human bones than anything else. Six miles more and we came to where the Graves family wintered and all perished except five, and two of them died after they got through. One mile more and we came to Foster's and Breen's cabins . . . the only ones that are standing yet and they present a gloomy appearance. In Foster's there were old clothes which were worn by females and also, long female hair which appeared as if it had fallen from the head, and any quantity of bones in and around the cabin.

"Tuesday, August 21, 1849—Today we traveled twelve miles . . . the road was very good for three or four miles, when we commenced climbing over rocks and stones. Ten miles brought us to the summit of the long dreaded Sierra Nevada. We came within a half mile of the top when it became so steep that we had to double team. The ascent was difficult but . . . we had all the wagons on the summit by one o'clock. . . . The descent was gentle with some places pretty steep, but not so rough as the ascent. The view from the peak on the south side of the gap was magnificent.

"Wednesday, August 22, 1849—Today we traveled eighteen miles. Soon after starting we crossed a small stream which headed in the mountain where we descended. About one mile from our camp, we left the valley to our right and went up a ravine to the left. Four miles more brought us to a group of lakes, six in number. The water in them was cool and beautifully clear. They averaged from one to two miles in length and from 400 to 500 yards in width. The road was very rough and after passing the lakes . . . we traveled up and down nine miles of the infernal, roughest road that ever was traveled. The last mile was so steep that we had to check down with ropes. . . .

"Thursday, August 23, 1849—Today we traveled fifteen miles. The road was indescribable, but it was the damn-dest,

rockiest road I ever saw. About three miles from our camp we had to take out our mules and let our wagons down with ropes. It was off of one rock and on to another. . . . We also ascended some very steep mountains and nine miles brought us to where we left the Yuba River. Six miles brought us to a valley on Bear River where we encamped. . . . Through the day we past another cabin where some of the sufferers of the Donner party got to.

"Friday, August 24, 1849—Today we traveled seven miles. Five miles brought us to the main branch of Bear River, where there is a large valley (Bear Valley). In descending to the valley there is a very steep hill where we let down with ropes for about three-quarters of a mile and the trees were worn very much where the rope had run around.

"Saturday, August 25, 1849— . . . traveled thirteen miles. The road for five miles was as usual, rough and hilly. Three miles brought us where we crossed the river and we then ascended two hills; the second was so steep that we had to double team. Seven miles brought us to a spring on the left hand side of the road and six miles more brought us to another spring. . . .

"Sunday, August 26, 1849—Today we traveled fourteen miles. Eleven miles brought us to another branch of Bear River where there were some of the gold diggers operating but not much success. The road from our camp to the branch ran along a ridge and was very hilly as there was a great many gaps in it. The descent to the branch was so steep and long (Steep Hollow) that we had to tie trees to the wagon. . . .

The latter part of the route from Bear Valley which Markle described was abandoned a few years later and soon reverted to a wilderness solitude, prowled only by forest animals and an occasional prospector. But last summer this quiet backwoods was invaded by a re-exploring party of California historians and foresters intent upon ferreting out emigrant lore that had lain dormant for nearly a century.

Twenty-one strong, the saddle caravan rode this unmarked, little known section of the old Emigrant Trail which follows along the headwaters of the Bear River between Bear Valley and Steep Hollow. This section cuts right across the midsection of beautiful, historically bountiful Tahoe National Forest, only a few miles from where now is centered much of California's summer and winter recreation.

The roll call of the caravan that re-routed and marked this wilderness section included leader Wendell T. Robie, business man of Auburn, California, and a former member of the California State Board of Forestry; William Levey, old-timer of Lowell Hill who guided the party; Harry Noyes Pratt, director of the E. B. Crocker Art Gallery in Sacramento; K. D. Robinson, Auburn; Edward Muldoon, North Sacramento; Dave Bowrin, Colfax; Jeanne Powell, Mrs. W. J. Lynch

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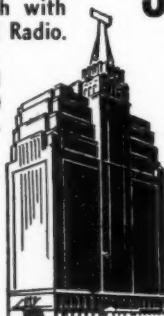
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and Beryl Granholm, with six youths from the Hidden Gold Camp for Boys near Colfax; Tahoe Forest Supervisor Guerdon Ellis; Leland Smith, Ranger John Hodgson and Ranger Anselmo Lewis, all of the Tahoe National Forest staff, and the writer, who is attached to the Forest Service regional headquarters in San Francisco.

Much of the route of the early emigrants through this wilderness was traced by sighting along a narrow belt of low timber, the old pathway of laborious clearing work by which the pioneers thrashed their way ahead.

About seven miles after leaving Bear Valley, and traveling through a maze of brush and trees, the explorers found frequent signs of the emigrant route around the brow of Nigger Jack Hill. Standing beside the still distinct wagon wheel impressions in the soil, Guide Levey pointed a gnarled forefinger at two massive cedars.

"Under the easternmost tree," he cited, "is the grave of a Forty-niner."

A quarter of a mile along the old road the riders stopped at a depression in the mountainside,—Mammoth Springs, it is called, though it is nearly dry now.

In covered wagon days, the fresh and pure water from that spring was a welcome relief to weary, dusty travelers. Sixteen-year-old emigrant Eliza Ann McAuley recorded this passage in her diary for Saturday, September 18, 1852: "About four o'clock we came to Mammoth Springs. This is most delicious water. Finding some good grass about a mile from here, we camped for the night. . ."

The camping place is at Springfield Flat, probably given that name by those members of the Donner party from Springfield, Illinois, who were rescued from Donner Lake.

Half a mile from Springfield Flat is the charred trunk of the Mother Pine, by far the largest tree any of the emigrants encountered on their westward journey over this route. Old-timers who remember the ancient pine before it was destroyed by fire say that the trunk once measured forty-eight feet in circumference.

Leaving Mother Pine, the old Emigrant Trail skirts the far brow of Nigger Jack Hill and leads into a heavily wooded west slope. There, suddenly, the trail comes out at Mule Springs, a moist grassy glade which saw the passing of approximately 10,000 pioneer wagons.

At the foot of Steep Hollow, twelve miles of rugged downgrade from Mule Springs, the trailmarking riders tallied their day's work consisting of erecting two large, rustic wooden signs, one at Bear Valley and another at Mule Springs, and fifty metal signs nailed to trees along the re-discovered route—markers for other hikers and riders to follow.

By virtue of place names and present day hiking or saddle distances between overnight stops, the Emigrant Trail, most of which was described by Markle up the eastern slope of the Sierra, over the crest and thence westward to the foothills bounding the Sacramento Valley, logically



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Index to ADVERTISERS April, 1941

| | |
|--|-----------|
| Aermotor Company | 200 |
| Aiken Nurseries, Inc., The | 205 |
| American Florist Supply Company | 196 |
| American Society for Control of Cancer | 207 |
| American Telephone and Telegraph Company | 2nd Cover |
| Atchison, Topeka & Santa Fe Railway Co. | 190 |
| Atkins & Company, E. C. | 200 |
| Bartlett Manufacturing Company | 198 |
| Beebe Brothers, Inc. | 206 |
| Bertillion, Lee D. | 206 |
| Canadian Pacific Railway Co. | 194 |
| Caterpillar Tractor Company | 147 |
| Chicago, Rock Island and Pacific Railway | 204 |
| Cleveland Tractor Company, The | 191 |
| Conwell, Inc., H. Ernest | 202 |
| Dempster Brothers, Inc. | 201 |
| Fechheimer Brothers Company | 200 |
| Galion Iron Works and Mfg. Co. | 201 |
| Hemingway Tree Farms | 202 |
| Herbst Brothers | 205 |
| Hereules Equipment & Rubber Company | 207 |
| Ingersoll Steel & Disc Division | 193 |
| International Harvester Company, Inc. | 187 |
| Keene Forestry Associates | 205 |
| Kelsey Nursery Service | 4th Cover |
| LeTourneau, Inc., R. G. | 189 |
| Lincoln Hotel | 207 |
| Loring, J. Alden | 206 |
| Los Angeles Chamber of Commerce | 148 |
| Macmillan Company, The | 198 |
| Musser Forests, Inc. | 202 |
| Pacific Marine Supply Company | 197 |
| Randolph, L. F. | 206 |
| Ransom Nursery | 200 |
| Remington Arms Co., Inc. | 188 |
| Rocky Mountain Evergreen Co. | 202 |
| Sandvik Saw and Tool Corporation | 203 |
| Save-The-Redwoods League | 196 |
| Smith & Company, D. B. | 149 |
| Southern Seed Co. | 202 |
| Stetson Company, John B. | 207 |
| Stewart, M. C. | 202 |
| Sunny Ridge Nursery | 202 |
| Tobacco By-Products & Chemical Corporation, Inc. | 196 |
| Warren Axe and Tool Company | 194 |
| Western Maine Forest Nursery | 202-205 |
| Weyerhaeuser Timber Company | 195 |
| Wiley & Sons, Inc., John | 203 |
| Wisconsin Aquatic Nurseries, The | 206 |
| Wood Industries, Inc., Gar | 3rd Cover |
| Woodworking Specialty Company | 196 |
| Yosemite Park and Curry Co. | 192 |
| Zenith Products | 206 |

divides itself into five separate geographical units of exploration for the Tahoe National Forest vacationist.

The first two sections may be covered in modern ease by automobile. The middle, or third, section which was explored and marked last summer, must be negotiated by foot or horseback. The last two sections over the foothills into the Sacramento Valley can be followed by automobile but the going is rough over unimproved country roads.

The first section begins in the vicinity of Reno, Nevada, at an elevation of 4,490 feet, following the Truckee River up and westward to the California-Nevada State line on U. S. Highway 40 to the Donner Monument at Donner Lake, elevation 5,940 feet. This distance is thirty-five miles, and the ruggedness of the terrain forewarns the still more rugged crest of the Sierra, five miles beyond.

The second section of the Emigrant Trail from Donner Lake to Bear Valley brings the traveler, via U. S. Highway 40, over the ramparts of beautiful Donner Pass, 7,135 feet elevation, to Emigrant Gap, 5,300 feet. There the tourist leaves Highway 40, branching off to the north on State Highway 20 down to Bear Valley, elevation 4,580 feet. This distance is approximately twenty-eight miles.

Donner Pass, on the crest of the Sierra Nevada, offers unsurpassed wonders at any time of the year. Here Nature beckons with some of her finest recreational advantages.

Fashionable resorts along the way are frequented the year around. Improved campgrounds developed by the Forest Service provide comfortable forest outings for thousands of visitors annually. Summer homes abound at blue Lake Tahoe, a few miles to the south of the Emigrant Trail. Skiing and tobogganning slopes, ski lifts, warming huts and ski trails attract thousands of snow sport fans, gay but still cognizant of the rich history and solemn tragedy instilled there in the mountains by the emigrant pioneers.

To the north of and paralleling U. S. Highway 40 lies the third section of the Emigrant Trail, twenty-two miles explored and routed last summer from Bear Valley via Mule Springs, elevation 3,900 feet, to Steep Hollow, 3,000 feet.

Section four, a thirty-five mile sector from Steep Hollow westward to Johnson's Ranch near Wheatland, eighty-six feet elevation, also was traced and posted. Traveling by automobile, the trailmarkers followed the indistinct route over agricultural and mining roads.

The fifth and last section of the emigrant route begins at Johnson's Ranch, one of the colorful landmarks of early California, and courses southward to Sutter's Fort, elevation thirty feet, near the city of Sacramento. This thirty-mile sector extends over foothill stretches and valley lands from a point a few miles east of the confluence of the Bear River and Feather River and terminates at the historical old fort from where four organized rescue parties and other smaller groups set out in the winter of 1846-1847 to aid the snowbound Donner emigrants.

WHO'S WHO

Among the Authors in This Issue

CLAUDE M. KREIDER (*A Wilderness of the Sky*), born in Kansas, is an adopted son of the West. His hobby—almost religion—is love for the high mountains, typified by the Sierra Nevada—in which lies the great Kings Canyon National Park, of which Mr. Kreider writes as a "wilderness of the sky."

B. W. CARTWRIGHT (right)—(*Solved—The Mystery of Ross's Goose*), was born in England and educated there. He came to this country in 1911 and located in Winnipeg, Canada, where he lives. Distinguished for his work and writing in the field of natural history, he is now



B. W. Cartwright and Ernest Donovan

Chief Naturalist of Ducks, Unlimited. Since 1938 he has traveled over 15,000 miles by air to report on the condition of Canadian waterfowl breeding grounds. Here he is seen interviewing Ernest Donovan—one of those who solved the "mystery" of the nesting geese.

S. O. HEIBERG and H. H. TRYON (*Nurse Crops*) are both well known foresters.

Mr. Heiberg, a Dane, was graduated from the Royal Agricultural College in Copenhagen in 1924 and took his master's degree in forestry at the Yale School of Forestry in 1927. He is now a member of the faculty at the New York State College of Forestry at Syracuse. "Hank" Tryon is a Harvard man, class of '13. Having done notable work in the fields of applied silviculture and utilization, he has been Director of the Black Rock Forest at Cornwall-on-Hudson since 1927.



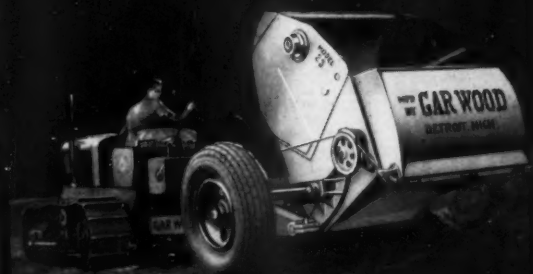
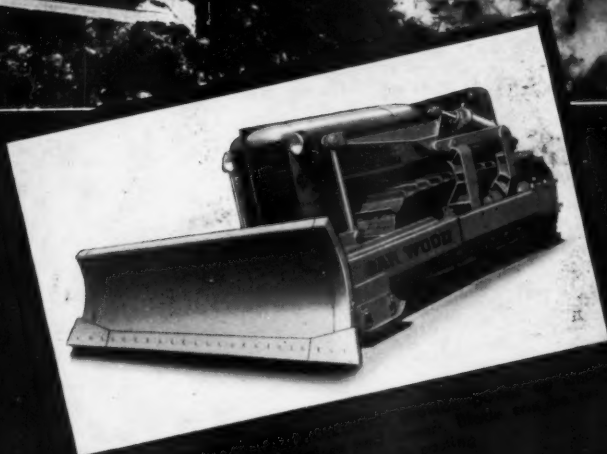
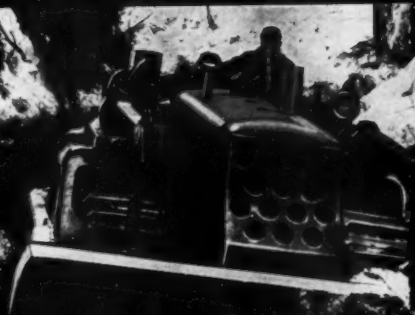
H. H. Tryon

RUSSELL D. DAIGLE (*Tahoe's Trail of the Pioneers*) is an enthusiastic conservationist who had his early training in the great outdoors in Montana. He is now attached to the Forest Service in California and deeply interested in historical phases of the Old West.

THE COVER—Highway winding through the giant redwood colonnades of Mill Creek. Photograph by Gabriel Moulin.

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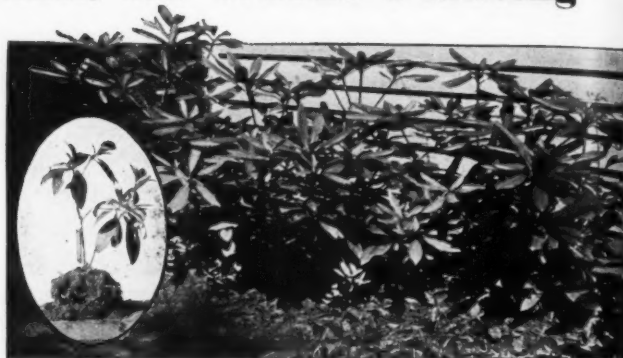
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